DC

ARPA-E Workshop Participants

Alejandro Buschmann Rubio

abuschma@ulagos.cl

My specific professional niche is marine algal ecology and cultivation and especially I have been involve in understanding seaweed productivity under natural and cultivation conditions and especially using its capacities for coastal bioremediation. In addition we have been involve in developing novel uses for seaweeds beyond the traditional uses for extraction of phycocolloids such as food, ingredients for animal feeds, agronomic applications,biofuels and other higher value chemicals.

In relation my expectancy is to develop partnerships with US research groups to develop a seaweed production industry with a higher economic impact.

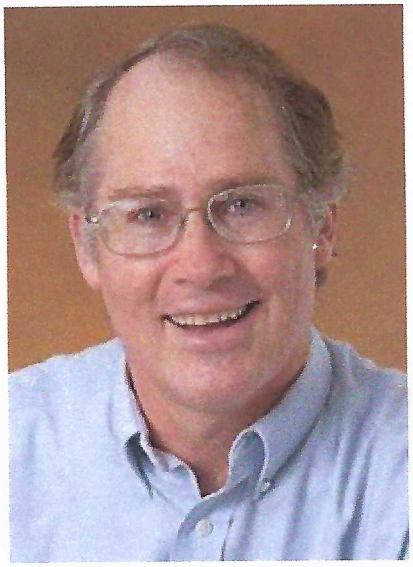
Bren Smith

bren@greenwave.org

I've been an ocean farmer for 15 years and have been growing macroalgae for 5 years using IMTA technologies. Currently, I'm developing and selling value added products made from kelp, ranging from specialty food and cosmetics to animal feed and fertilizer. I hope to get up to speed on the latest technologies around biofuel production and explore next steps for scaling macroalgae production.

Brian Wilcox

Brian.wilcox@marinebiomass.com



My specific interest is robotic farming of macroalgae in the open ocean to provide abundant energy feedstock. I hope to meet and network with others interested in macroalgae cultivation.

Cindy Wilcox
Cindy.wilcox@marinebiomass.com

My specific interest is in selecting macroalgae species/strains for energy feedstocks and incubating sporelings for cultivation. I hope to meet people with similar interests, and those with experiences with the West Coast regulatory environment.

Michael Chambers

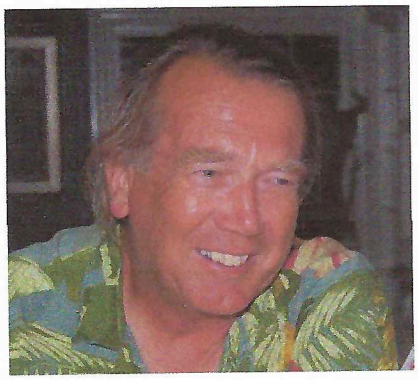
Michael.chambers@unh.edu

Currently my research involves the development of offshore floating platforms for integrated multi-trophic aquaculture. This work includes system design, site selection, permitting, growout and measurement of ecosystem services. Species that are being cultured include steelhead trout, blue mussels, and sugar kelp. The University of New Hampshire maintains two offshore aquaculture leases for evaluating and demonstrating new technologies

I'm interested to learn and share ideas for large scale production, harvesting and ecosystem services of seaweed.

Cliff Goudey

cliffgoudey@gmail.com



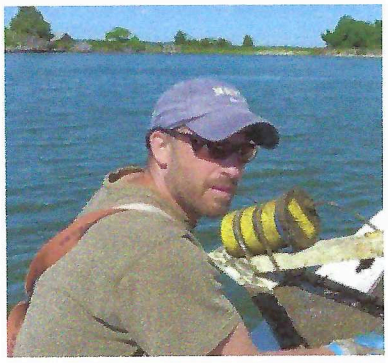
Cliff is an ocean engineer with 30 years of experience addressing real problems plaguing the oceans and those who work in and on it. His areas of specialty are naval architecture, offshore aquaculture, ocean-based renewable energy, commercial fishing, underwater vehicles and robotics, autonomous vessels, hydrodynamics, tank testing, and sea trials. He is experienced in the design of offshore macroalgae culture systems, deep-water moorings, and de-risking ocean systems through simulation and scale-model tank tests.

My niche in the advancement of macroalgae farming is in the development of the offshore systems that will be needed to culture the quantities needed to help meet our planet's energy needs absent fossil energy. My specialty is mooring systems, floating structures, harvest technologies, energy-efficient transport systems, and ocean-based robotics. My goals for the workshop are to better understand the

knowledge gaps, identify areas where my expertise would be useful, learn ARPA-E's specific plans for enabling sector growth, and identify potential research collaborators.

David Frederiksson

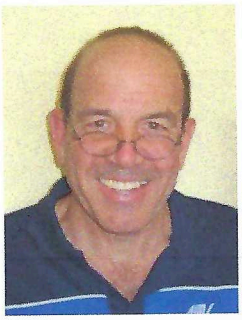
fredriks@usna.edu



Dr. David W. Fredriksson is an Associate Professor of Ocean Engineering at the United States Naval Academy. Dr. Fredriksson had helped to develop numerical and physical modeling techniques along with in-situ deployment of engineering related instrumentation for coastal and offshore aquaculture. He would like to team with researchers in other disciplines requiring engineering support for the effective design of kelp farming structures in the marine environment.

Dominick Mendola

dmendola@ucsd.edu



I have a greater than 50yrs. professional work experience in aquaculture systems design and engineering for culture of a large variety of marine and aquatic organisms including marine macrophytic algae, both for their natural product chemical metabolites and for food and energy uses. 15 yrs experience in oceanographic system engineering and marine acoustical investigations at UCSD/SIO, including 8-yrs of at-sea oceanographic research experience.

Donna Lanzetta

Donna.lanzetta@yahoo.com

Manna Fish Farms is an open ocean aquaculture company located in Long Island, NY. We are a multitrophic aquaculture venture awaiting permits and planning on raising striped bass and other finfish, shellfish, and seaweed/kelp in the Atlantic Ocean (16.2 miles south of Hampton Bays, Long Island). We are interested in learning and exploring the many potential uses for macroalgae at our land based facility affiliated with our farm; from growing it for direct sale to markets, to incorporating it in our feeds, to exploring the potential for biofuels. We expect to learn about grant opportunities and get a pulse of the state of knowledge of macroalgae production and find potential oppurtunities to support macroalgae production in our future plans.

Corinne Drennan

Corinne.Drennan@pnnl.gov

My expertise is in conversion of wet feedstocks, primarily to liquid transportation fuels, and products precursors. This includes hydrothermal liquefaction (HTL) and subsequent catalytic upgrading of the biocrude and aqueous phases obtained from HTL. It also includes other conversion technologies and energy systems analysis.

I expect to gain some familiarity with the capabilities of other participants and their organizations. I also hope to find opportunities for collaboration.

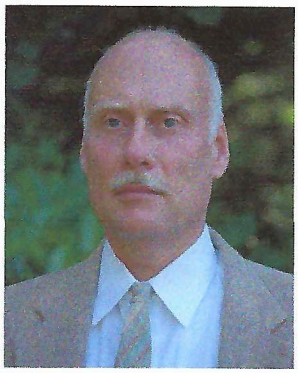
Erick Ask

Erick.Ask@fmc.com

I've been working with about twenty seaweed species for the carrageenan and alginate industries on six continents for over 25 years, both on cultivated and ocean harvested supplies. The work entails improvements on quality, volume, cost and timeliness

Michael Huesemann

Michael.Huesemann@pnnl.gov



Dr. Michael Huesemann has more than 15 years experience in algal biofuels R&D, including research on the biochemical conversion (acetone-butanol fermentation) of seaweed, as well as growth modeling and climate-simulated culturing of photosynthetic organisms in mesoscale indoor pond systems.

Ira Levine

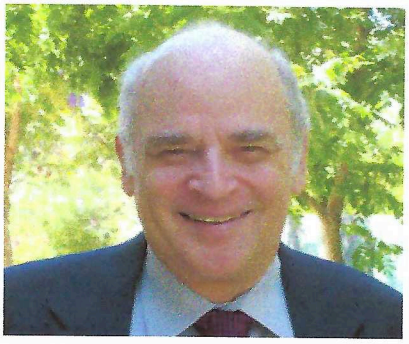
llevine@maine.edu

Ira A. Levine, Ph.D. 20+ years in seaweed farming and marketing, owning farms in Maine and Hawaii, and New Brunswick, Canada. Additional farming experience in Japan, China, India, Philippines, and Malaysia. Phycology Professor for 31 years, cultivar improvement and farming education. Currently a professor and President of the Algae Foundation.

Expectations are bifocal: 1. Recruitment of macroalgal educators to assist with DOE funded algal educational curriculum development; 2. Assist with the development of a long term seaweed biomass development program (farming technologies and long term strain development).

John Benemann

JBenemann@aol.com



B.S. Chemistry and Ph.D. Biochemistry, University of California Berkeley; postdoctoral fellow, U.C. San Diego. Associate Researcher in Depts. of Civil Engineering and Plant and Microbial Biology, U.C. Berkeley. With Dr. Joseph Weissman, founded two algal biotechnology and aquaculture companies, EnBio, Inc., and, later, SeaAg, Inc. Associate Professor, Dept. Applied Biology, Georgia Institute of Technology and Adjunct Professor, University Hawaii. Since 2007, CEO of MicroBio Engineering, Inc., San Luis Obispo, California, a consulting engineering and R&D company in algal technologies and wastewater treatment founded with Prof. Tryg Lundquist, California State Polytechnic University, Cal Poly. Founding director, Algae Biomass Organization (ABO). Consultant and advisor to U.S. and international agencies and companies. Extensive background in algal biotechnology, from photosynthesis and genetics to process design and engineering of large-scale cultivation systems.

Jonathan Burbaum

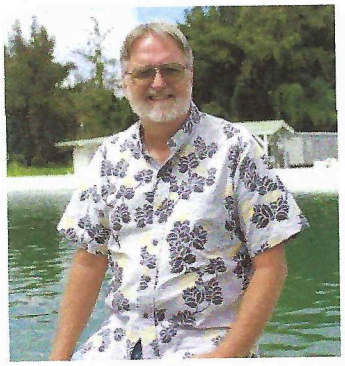
burbaum@gmail.com

Dr. Jonathan Burbaum currently serves as an Entrepreneur-in-Residence for Spruce Capital Partners, LLC.

Prior to joining Spruce, Jonathan was a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E), focusing broadly on transportation energy, from advanced biotechnology applications for biofuels to network optimization applied to personal transportation energy use. He has had a long career as a technology leader, primarily focusing on realizing value from novel technologies, products, and commercial strategies in the life sciences. He founded two San Diego-based companies, Azure Therapeutics and Gnosys Consulting, and has worked extensively for corporate, venture, and government clients. Before entering consulting, he played seminal roles with two venture-backed startup companies, Pharmacopeia (Princeton, NJ) from inception, through IPO and commercial launch, and as VP of Research for ActivX Biosciences (San Diego, CA). He began his industrial career at the Merck Research Laboratories in 1991.

Kevin D. Hopkins

hopkins@hawaii.edu



Kevin D. Hopkins, professor of aquaculture at the University of Hawaii at Hilo, is also moderator of the MarineAgronomy.org website. He has been actively involved in all aspects of aquaculture for more than 40 years. Specific interests re: seaweed cultivation are ecological services from seaweed farms (impacts on fisheries, IMTA and rehabilitation of dead zones); general policy and economics; and development of research methodologies that can be used to model large-scale seaweed operations. Through the PACRC, he can use replicated tanks systems for microcosms (4.6 m to 24 m diameter) and access to sewage effluent (as a continuous nutrient source).

Loretta Roberson

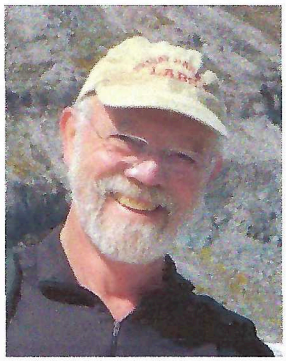
Loretta.Roberson@gmail.com

Director of the Center for Renewable Energy and Sustainability at UPRRP interested in cultivation of macroalgae as feedstock for biofuel and bioproduct production and bioremediation, and also the impact of anthropogenic factors on algal biology and physiology.

I hope the workshop will help identify ongoing projects or commercial systems that are compatible with or could supplement current and proposed work in my lab or where our work might fit in with other projects. I'd also like to hear about DOE interests in macroalgae.

Thomas Mumford

tom@marineagronomics.com



My expertise is primarily in the area of cultivation- the biology of seaweeds, genetics, strain selection, and optimizing production. I also have expertise in the socio-economics of macroalgal production-permitting and education in the political arena. I have had experience in the cultivation and development of production systems of the carrgeennophytes *Mazzaella* and *Chondrocanthus*, *Pyropia* cultivation for product of nori, and *Gracilaria* for agar production.

My goal of the workshop is to help develop a long-term, systematic approach for the large-scale cultivation of macroalgae to be used for energy production, food, and chemicals. To be able to participate in the execution of that plan using my expertise in cultivation, permitting, and site selection.

Mark Capron

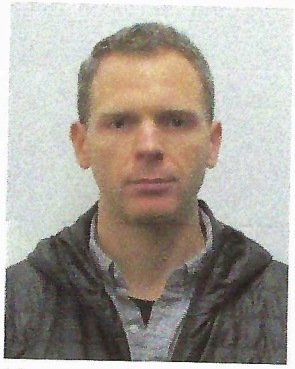
MarkCapron@OceanForests.com

Mr. Capron combines physics, chemistry, and biology experience from U.S. Navy Ocean Facilities R&D and resource recovery. That is recovering energy, chemicals, metals from municipal solid and wastewater, a new direction for the "wastes" industry. He has published concept designs with cost estimates for macroalgae production at the scale of 600 quadrillion BTU (billions of tons) per year. Mr. Capron is happy if the projects evolving from the workshop step toward completing the nutrient cycle at scale. Even better if Mr. Capron provides technical trouble-shooting project management for some teams or recruits others for the Ocean Foresters' George Barley Water Prize team.

Alexis T. Wolfe
Alexis.Martin@ee.doe.gov

The Bioenergy Technologies Office Algae Program is carrying out a long-term applied research and development (R&D) strategy to increase the yields and lower the costs of algal biofuels by working with partners to develop new technologies, to integrate technologies at commercially-relevant scales, and conduct crosscutting analyses to understand the potential and challenges of an algal biofuel industry that is capable of annually producing billions of gallons of renewable diesel, gasoline, and jet fuels. Algal biomass includes microalgae and macroalgae, as well as cyanobacteria. Algal biomass development focuses on identifying or improving on those properties, such as a fast growth rate and high oil content, that make algae attractive to convert into biofuels.

Matt Eisaman
meisaman@google.com



I have no direct experience with macroalgae, but I have worked on a range of energy technologies, including CO2 capture and advanced photovoltaics.

I work on Google[X]'s Rapid Evaluation team. Our mission is to understand a range of industries and technologies in order to come up with new business opportunities for Google. I would like to learn as much as I can at this workshop about the state of the field, major challenges, and future technology readiness and cost targets/projections.

Gene Lester

Gene.Lester@ARS.USDA.GOV

As the National Program Leader for the USDA, Agricultural Research Service for Biorefining my program research mission enables new commercially-viable technologies to (1) convert materials and byproducts from agriculture and for food production into fuels and other marketable products, and (2) reduce risks and increase profitability in existing industrial biorefineries. Currently I have one project that utilizes algae as biofuel feedstock; thus, my reason for attending is learn more about algae as a biofuels feedstock.

Hauke Kite-Powell

hauke@whoi.edu

Professional interest: economic and life cycle modeling of macroalgae production and biofuel conversion.

Objective: learn about federal program priorities, learn about new approaches to macroalgae production and conversion, and identify opportunities for collaboration with research teams.

Mike Rust

mike.rust@noaa.gov

Mike started with macroalgae in the 1980's as a Peace Corps volunteer working on Euchuma farming in the Philippines, but more recently he has worked on product development for seaweeds (food and feed) and marine aquaculture industry management issues. He currently serves as NOAA's Science lead for all things related to marine aquaculture.

Stephen O'Leary

Stephen.OLeary@nrc-cnrc.gc.ca

Dr. Stephen O'Leary is the Director of the National Research Council Canada's Algal Carbon Conversion (ACC) Flagship Program, which brings together NRCC and its industry partners to develop microalgae biorefinery technologies for the sustainable conversion of industrial carbon dioxide emissions into marketable bioproducts. Stephen's other research activities include experimental cultivation and molecular biology of seaweeds and microalgae to investigate physical conditions that result in the improved accumulation of biomass and selected bioproducts. He has worked closely with the algae cultivation industry to optimize the production of materials destined for functional food, bioactive, and bio-energy markets.

Professional Interests include (seaweeds): Onshore tank cultivation of seaweeds for production of high value compounds, Extraction and evaluation of bioactive compounds from algae biomass

Although currently leading a national program in microalgal carbon conversion, I am generally responsible for the development of the National Research Council Canada's R&D activities related to seaweeds or microalgae. My goal from this workshop is to learn where ARPA-E is making investments in the development of a North American seaweed industry and to explore opportunities for connection with activities in Canada.

Phil Cruver

Phil@catalinasearanch.com

Phil Cruver is Founder and CEO of Catalina Sea Ranch (CSR) which holds an USACE permit for conducting aquaculture on 100 acres in U.S. Federal waters located about six miles offshore Huntington Beach, California. CSR is conducting research for culturing *Macrocystis pyrifera, Palmaria mollis*, and *Gracilaria pacifica* in the open ocean.

CSR is seeking partners who would be interested in collaborative research for macroalgae cultivation, genomics, and ecosystem services at its offshore ranch. CSR has the permit, Ocean Internet of Things™ platform and Research Vessel for facilitating innovative research in a real-world environment.

Philip Pienkos

Philip.Pienkos@nrel.gov

NREL was involved in the evaluation of macroalgae as a feedstock for biofuel production during the early days of the Aquatic Species Program. While we do not have any active programs in macroalgae at the moment, our expertise in critical areas for biofuel production from terrestrial and microalgal biomass including compositional analysis, conversion technologies (for fuels and chemicals), and TEA/LCA are relevant to the topic at hand.

I hope to learn more about the current state of technology for macroalgae and to interact with members of the community to determine if there is a role for NREL to play in this field whether through an expected ARPA-E FOA or through some other mechanism. I also hope to contribute to the general discussion by relating state of technologies for terrestrial and microalgal based biofuels including the hurdles to commercialization that can be relevant to macroalgal processes, and thus help others to develop realistic concepts that factor in challenges being addressed in these more mature fields.

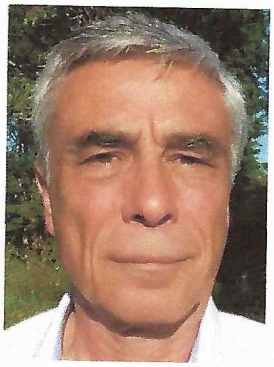
Caird Rexroad III

Caird.RexroadIII@ARS.USDA.GOV

I serve as the USDA ARS National Program for Aquaculture, this program's mission is to is to conduct high quality, relevant, fundamental, and applied aquaculture research, to improve the systems for raising domesticated aquaculture species, and to transfer technology to enhance the productivity and efficiency of U.S. producers and the quality of seafood and other aquatic animal products. My goal for the workshop is to get an education in the world of Macroalgae, and see how it relates to research activities in our Agency.

Ricardo Radulovich

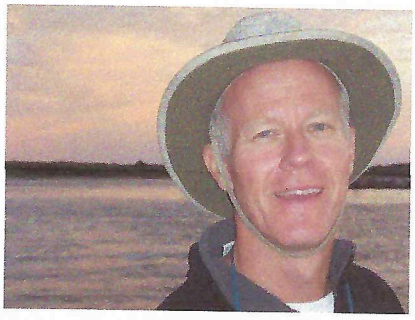
ricardo.radulovic@gmail.com



Specific professional niche: Tropical seaweed cultivation and use for food and other products and for services, including biodiversity enrichment/fisheries enhancement. We are providing advice to a Costa Rican company that is developing several seaweed-containing food products, expected to begin reaching markets mid 2016.

Scott Lindell

slindell@mbl.edu



I have been a PI on NOAA and USDA funded research projects to refine methods of culture and marketing of 2 species of seaweed (*Gracilaria tikvahiae* and sugar kelp). I have worked with networks of shellfish growers to train and educate them on efficient growing methods of these "sea vegetables", and strategies for market development including connecting them to and managing relationships with buyers.

I expect to expand and deepen my network of collaborators. I expect to develop focused areas of research and development that could fundamentally change the way seaweed farming is conducted and the contributions it can make to society.

Simona Augyte

Simona.augyte@uconn.edu

I am a doctoral graduate student under the supervision of Dr. Charles Yarish and have experience in kelp cultivation. This includes SCUBA diving to find reproductive material, processing tissue, and seeding as well as maintaining spools of juvenile kelp in the laboratory. Additionally, I have collaborated with farmers to out plant seed string, monitor growth and harvest the final product at open-water farm sites.

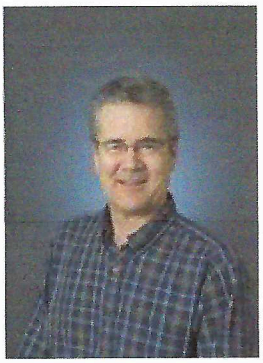
Steffen Cole Brandstrup Hansen

shansen@thegef.org

I have done reports in Denmark on the potential of linking agricultural production with that of production of Sugar Kelp along the Danish Eastern shore line. Further, I worked on business case development to initiate a production of Sugar Kelp in a Danish bay area. During my work I visited Danish algae cultivators and discussed issues regarding hatchery production, biomass growth rates and harvest technology challenges. I also have a basic knowledge regarding use of brown kelp as a feed supplement within the agriculture/aquaculture sectors. What do I expect to get out of the workshop: I work for the Global Environment Facility (as part of the International Waters Focal Area) giving grants to a cohort of water projects within the marine and fresh water realms. As such, I am interested to investigate the feasibility of establishing partnerships between the GEF and workshop participants, incl ARPA, for the purpose of piloting/verifying large scale seaweed production as both a cost competitive bio-filtering mechanism and a means to supply proteins.

Tim Stanton

tstanton@whoi.edu



Acoustics is a potential tool for monitoring the growth of macroalgae. The acoustic scattering methods I have developed and applied toward characterizing abundance of a variety of species of marine life are also applicable to characterizing the abundance of macroalgae. There are currently two scientific echosounders commercially available (two different companies) for characterizing marine life and whose designs were driven by my specifications. I am interested in adapting my methods for marine life in the development of acoustic methods to accurately monitor the growth of macroalgae. In this workshop, I look to identify key issues to help drive this development.

Zhaoqing Yang

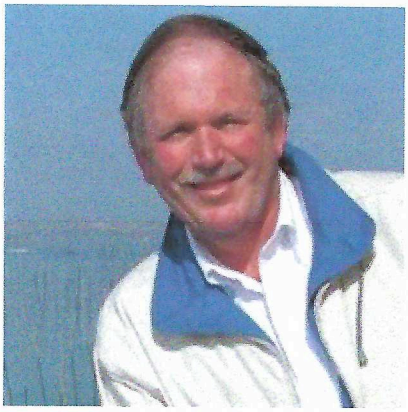
Zhaoqing.Yang@pnnl.gov

My expertise related to macroalgae includes coastal circulation and water quality modeling, modeling support for site assessment (circulation, substrate, wash-off) and evaluation of effects of macroalgae on currents, nutrient, bed scour and sediment transport.

I expect to gain insight on the current knowledge gaps of macroalgae production, research status, what are the short-term and long-term goals of ARPA-E on macroalgae production research, and finally any action plan after the workshop.

Charles Yarish

Charles.Yarish@uconn.edu



Yarish is in the Department of Ecology & Evolutionary Biology. He has developed an internationally known laboratory for seaweed research and aquaculture. He is most interested in the development of integrated multi-trophic aquaculture (IMTA) and nutrient bioextraction systems for coastal management. He has published extensively and has received numerous extramural grants and awards. His latest co-edited book is: Latimer, J.S., M. Tedesco, R.L. Swanson, **C. Yarish**, P. Stacey and C. Garza. 2014. ***Long Island Sound: Prospects for the Urban Sea***. Springer Science+Business Media, NY. 558pp.

Seaweeds have significant value in US agriculture as organic fertilizers, feeds, as well as functional foods, nutraceuticals, and alternative medicinal products. Yarish will present an overview to open source seaweed culture systems that are relevant to meeting market demands in Northeast America (and beyond) that will also improve water quality through nutrient bioextraction and IMTA both on land and the sea.

Sarah Redmond

Sarah.Redmond@maine.edu

I work for Maine Sea Grant as a marine extension agent, providing research, education, and outreach around macroalgae and aquaculture. I run a seaweed research and development nursery and sea farm in Franklin, Maine. My work supports new crop development, new farmers, and new educational and research efforts around seaweed aquaculture. I hope to network and participate in visioning at the meeting.

James Leichter

jleichter@ucsd.edu

Dr. James J. Leichter, Professor Scripps Institution of Oceanography, University of California at San Diego. I am interested in the potential for coastal and open ocean cultivation of macro algae based on naturally occurring oceanic nutrients, for biofuels production as well as human consumption. I have expertise in the biology and ecology of naturally occurring kelp forests as well as coastal oceanography and nutrient availability and transport.

Ryan Senger

senger@vt.edu

I am involved in metabolic modeling, bioprospecting, and cultivating algae in bioreactors. From this workshop I hope to gain a better understanding of the latest advances in cultivation and bioreactor design as well as valuable secondary metabolites that are produced by different algae.

Jang K Kim

jang.kim@inu.ac.kr

Re Research Interest- Seaweed aquaculture - open water, nursery, selective breeding and automation; Integrated Multi-Trophic Aquaculture; Nutrient Bioextraction

Ronald Pate

rcpate@sandia.gov

My niche with algae, in general, is looking at scale-up feasibility for algae-based biofuels from a broad systems perspective ... including resource demand and availability, and techno-economics of the overall value chain. Past efforts have been more focused on microalgae, but more recently I and other SNL colleagues have been pursuing the potential and feasibility for polyculture benthic algal turf biomass as feedstock for biofuels. This has some overlap with macro algae, although the emphasis is with on-shore cultivation rather than offshore marine. However, SNL's bioenergy program has also explored the processing and conversion of offshore marine macro algae for fuels.

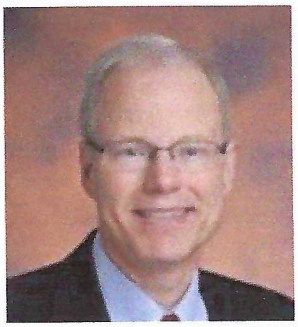
My expectations for the workshop are to see where and how SNL's bioenergy program efforts and technical capabilities, which have been funded primarily by DOE/EERE-BETO, the DOE Office of Science, internal LDRD funds, and some external partnering with industry, may possibly be leveraged to contribute to an ARPA-e program in macro algae.

Scott Nguyen

snguyen@automarinesys.com

Scott Nguyen, PhD is a co-founder of Autonomous Marine Systems, an early stage marine data company using fleets of networked robotic sailboats to deliver real-time intelligence of the oceans. We do it at 1/10th the cost of existing services, with no CO2 emissions, and zero risk to human life. Dr. Nguyen has over 10 years of experience in the energy industry and holds a PhD in physics from Harvard University.

ARPA-E Participants



eric.rohlfing@hq.doe.gov

Dr. Eric A. Rohlfing is the Deputy Director for Technology of the Advanced Research Projects Agency–Energy (ARPA-E), responsible for oversight of all technology issues relating to ARPA-E's programs.

Dr. Rohlfing joins ARPA-E from the Department of Energy's Office of Science, where he most recently served as Director of the Chemical Sciences, Geosciences, and Biosciences Division in the Office of Basic Energy Sciences (BES). As Director, Dr. Rohlfing provided leadership and direction in establishing vision, strategic plans, goals, and objectives for the research activities supported by the Division. He joined BES in 1997 and later served as program manager for the Atomic, Molecular and Optical Sciences program (2000-2003) and team leader for Fundamental Interactions (2003-2006) before becoming Director.

Marc.VonKeitz@hq.doe.gov

Dr. Marc von Keitz currently serves as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). His focus at ARPA-E includes biological energy conversion processes, sustainable biomass production and utilization, as well as energy-efficiency.

Prior to joining ARPA-E, Dr. von Keitz co-founded BioCee, Inc., an industrial biotechnology company, where he served as President, CTO, and Board Member. In these roles, Dr. von Keitz oversaw company management, technology leadership, fundraising, and strategy development.

From 2000 to 2011 Dr. von Keitz was Program Director at the University of Minnesota's Biotechnology Institute (BTI) and was responsible for all scientific and managerial aspects of the university's central fermentation and bioprocessing facility, the Biotechnology Resource Center. At BTI he also developed and managed Minnesota's first laboratory based incubator facility for biotechnology startup companies. Prior to serving as Program Director at BTI, Dr. von Keitz founded an online marketing firm promoting energy-efficient and environmentally sound housing, Green Homes Marketspace, Inc., and also worked as an Environmental Engineer at Montgomery-Watson

graciela.blanchet@hq.doe.gov

Dr. Graciela Blanchet is a Technology-To-Market Advisor at the Advanced Research Projects Agency – Energy (ARPA-E), where she helps prepare breakthrough energy technologies for transition from lab to market, specifically focusing on renewable energy and carbon footprint mitigation.

Prior to joining ARPA-E, Blanchet served as the Chief Technical Officer at NanoTerra for five years. While in this role, Blanchet recruited and hired top-tier scientists and guided them in the process of development and commercialization of functional nanomaterials, water purification reactors, and high resolution printing of silicon-photovoltaic cells. Prior to working at NanoTerra, Blanchet spent much of her career at DuPont where she held multiple positions. While at DuPont, Blanchet led the

printable electronics and laser imaging efforts developing technologies that have since been successfully commercialized.

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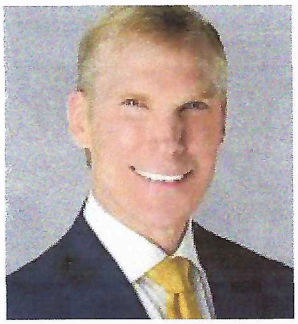
Dr. David Brown currently serves as an ARPA-E Fellow, with interests in smart manufacturing, thermoelectrics, and functional metallurgy. Dr. Brown received his Ph.D. in Applied Physics at the California Institute of Technology, under the guidance of Dr. G. Jeffrey Snyder. He was named a Resnick Sustainability Institute Fellow.

For his Ph.D. thesis, Dr. Brown studied the thermoelectric properties of super-ionic mixed ion-electron conductors. He discovered a new mechanism by which their thermoelectric performance was enhanced, measuring a doubling of performance in a novel material system Copper Selenide. This work indicates a broad new path for thermoelectric material research and development.



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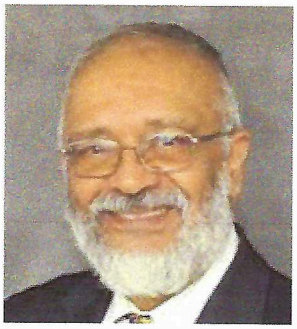
Dr. Joe Cornelius currently serves as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). His focus at ARPA-E includes bioenergy production and conversion as a renewable and sustainable energy source, transportation fuel, and chemical feedstock—applying innovations in biotechnology, genomics, metabolic engineering, molecular breeding, computational analytics, remote sensing, and precision robotics to improve biomass energy density, production intensity, and environmental impact.

Dr. Cornelius spent over 30 years with Monsanto, Pfizer, and BASF during which he collaboratively discovered, developed, and commercialized more than 75 new products and transformational innovations in the agriculture, food, health, and bioenergy sectors; forged over 25 strategic alliances and global partnerships with multinationals, universities, and venture capital firms; and launched several industry-shaping business platforms, creating compelling economic, environmental, and social responsibility benefits.



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Dr. Krish Doraiswamy is a Technology-to-Market Advisor at the Advanced Research Projects Agency – Energy (ARPA-E), where he helps prepare innovative energy technologies for transition from the lab to the market. He is currently focused on the new Transportation Energy Resources from Renewable Agriculture (TERRA) program, which seeks to rapidly accelerate biomass yield gains through automated, predictive and systems-level approaches to biofuel crop breeding.

Prior to joining ARPA-E, Krish spent much of his career at DuPont, where he built expertise in technology strategy, marketing research, strategic planning and business development, and helped to launch several early stage business ventures. Among many early roles, he was Manager of Marketing and Business Development for DuPont Holographic Materials, where he negotiated strategic research and development (R&D) alliances with U.S. and Japanese partners. He continued at DuPont as Director of Business Development for a biotechnology-based business venture focused on DNA-based pathogen detection for food safety applications. In this role he also developed licensing strategy and negotiated external financing for the new business. He went on to pursue new business development for DuPont iTechnologies, where he formulated and implemented strategy for polymer-based photonics applications.

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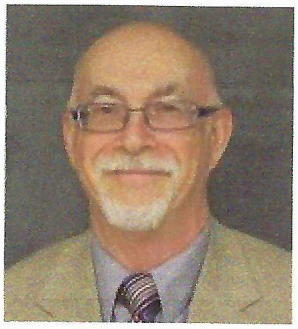
Dr. Adrienne Little is currently serving as a Fellow at the Advanced Research Projects Agency – Energy (ARPA-E), interested in novel materials and manufacturing solutions to key problems in the areas of waste heat recovery, power generation, and water treatment.

Little earned her Ph.D. and M.S. degrees in Mechanical Engineering from the Georgia Institute of Technology where she worked at the Sustainable Thermal Systems Laboratory under the direction of Dr. Srinivas Garimella. At Georgia Tech, Little developed passive, heat-activated pumps and compressors and high-performance heat exchangers for waste heat recovery systems. Applications included space conditioning, datacenter electronics cooling, and power plant efficiency enhancement. She received her B.S. from the University of California, Berkeley in Mechanical

Engineering where she explored the effects of surface wettability on two-phase flow regimes inside hydrogen fuel cells.



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Dr. Grigorii Soloveichik currently serves as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). His focus at ARPA-E includes developing electrochemical processes and advanced materials for energy storage and conversion.Prior to joining ARPA-E, Dr. Soloveichik worked as a GE Global Research as a Senior Staff Chemist, in addition to being the Director of the Energy Frontier Research Center for Electrocatalysis, Transport Phenomena, and Materials (CETM) for Innovative Energy Storage. While there, he developed novel rechargeable liquid fuel cells and high energy density flow batteries, designed catalytic and electrochemical processes for functionalization of arenes and phenols, and developed novel electrolytes and electrocatalysts. Before that, Dr. Soloveichik served as a Senior Scientist at Moltech, now Sion Corporation, developing methods for anode protection and designing new electrolytes for lithium-sulfur rechargeable batteries. In addition, Dr. Soloveichik served as a member of the Joint Center on Electrochemical Storage Research Advisory Board. He is also the author/coauthor of 71 issued US patents and more than 125 papers in peer-reviewed journals.He holds the degrees of M.S. in Chemistry, Ph.D. in Inorganic Chemistry, and D.Sc. in Chemistry from Moscow State University.

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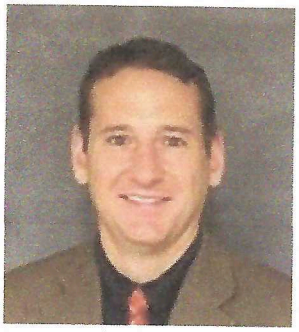
Dr. Addison Killean Stark currently serves as an ARPA-E Fellow focusing on advanced thermochemical conversion to fuels and chemicals, energy innovation in agricultural systems, and intensification of energy conversion reactor designs. Dr. Stark completed his Ph.D. in Mechanical Engineering from MIT where he was a member of the Reacting Gas Dynamics Laboratory lead by Professor Ahmed F. Ghoniem. For his Ph.D. thesis, Dr. Stark elucidated the role of transport phenomena on the thermochemical conversion of biomass in fluidized bed reactors (gasification and pyrolysis).



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Jason Wible is a Technology-to-Market Advisor at the Advanced Research Projects Agency-Energy (ARPA-E) where he helps transition breakthrough energy technologies from lab to market. He is responsible for leading the commercialization strategy for the Reducing Emissions through Methanotrophic Organisms for Transportation Energy (REMOTE) and other ARPA-E programs relevant to the oil and natural gas industries.

Prior to joining ARPA-E, Wible served as a principal at a technology startup company from 2009 to 2013. He played an active role in all parts of the business—from product conception through commercialization, including fundraising, team building, and business growth.

From 2000 to 2009, Wible worked at Schlumberger, an oil and gas services company. During his time at Schlumberger, Wible held field engineering, service quality, equipment maintenance, and crew management positions. His work included reservoir evaluation, formation evaluation, and cased-hole production projects for oil and gas producers such as ConocoPhillips and BP and their operations on the North Slope of Alaska and in the deepwater Gulf of Mexico.

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