12th Jun 2023

07:00 - 08:30	**Registration** Naupaka Ballroom, sections V, VI & VII	
08:30 - 08:35	**Welcome and introduction** Naupaka Ballroom, section IV Taraka Dale, Olaf Kruse	
08:35 - 10:20	**Plenary 1, 2, 3 & 4** Naupaka Ballroom, section IV Olaf Kruse Plenary **08:35 - 09:05 [PLE.01]** **Applied Algae Research at the US Department of Energy** Nichole Fitzgerald *Bioenergy Technologies Office, US Department of Energy, Golden, USA* **09:05 - 09:20 [PLE.02]** **The energy EarthshotsTM initiative at DOE: A portfolio approach to drive Net-Zero carbon goals** Chris Bradley *U.S. Department of Energy, Washington D.C., USA* **09:20 - 09:50 [PLE.03]** **Hypes, hopes, and the way forward for microalgal biotechnology** Rene Wijffels *Wageningen University, Wageningen, The Netherlands* **09:50 - 10:20 [PLE.04]** **Synthetic biology drives the green transition** Sotirios Kampranis *University of Copenhagen, København, Denmark*	
10:20 - 10:50	**Coffee break** Naupaka Ballroom, sections V, VI & VII	
10:50 - 12:35	**Session 1A – Molecular Engineering and metabolic regulation of algae** Naupaka Ballroom, section IV Sotirios Kampranis Oral	**Session 1B – Outdoor Cultivation #1** Naupaka Ballroom, sections I, II & III Valerie Harmon Oral

	10:50 - 11:15 [INV.01] **Mechanistic and genetic basis of single- and double-strand templated repair at CRISPR/Cas-induced DNA breaks in the green alga *Chlamydomonas reinhardtii*** Aron Ferenczi, Andre Coimbra, Yen Peng Chew, Erika Kroll, Charlotte von Koppenfels, Andrew Hudson, Attila Molnar *The University of Edinburgh School of Biological Sciences, Edinburgh, UK* **11:15 - 11:35 [O1A.01]** **Synthetic biology mediated metabolic engineering in eukaryotic green and red microalgae** Kyle Lauersen *King Abdullah University of Science and Technology, Thuwal, Saudi Arabia* **11:35 - 11:55 [O1A.02]** **BoTIPseq: Transposon-insertion polymorphism sequencing technique for *Botryococcus braunii*** Koji Kawamura[1], Naoya Komatsubara[1], Shigeru Okada[2] [1]*Osaka Institute of Technology, Osaka, Japan.* [2]*The University of Tokyo, Tokyo, Japan* **11:55 - 12:15 [O1A.03]** **Metabolic engineering of *Nannochloropsis oceanica* to produce astaxanthin** Davide Canini[1], Flavio Martini[1], Beatrice Pacenza[1], Dario Malesci[1], Sarah D'Adamo[2], Matteo Ballottari[1] [1]*Department of Biotechnology, University of Verona, Verona, Italy.* [2]*Bioprocess Engineering, Wageningen University, Wageningen, The Netherlands* **12:15 - 12:35 [O1A.04]** **Recent advances in *Picochlorum renovo* strain development** Lukas Dahlin, Alex Meyers, Ellsbeth Webb, Benton Wachter, Venkataramanan Subramanian, Jeffrey Linger, Michael Guarnieri *National Renewable Energy Laboratory, Golden, CO, USA*	**10:50 - 11:15 [INV.02]** **Towards Sustainable Carbon Energetics in Photosynthetic Algae** Lieve Laurens *National Renewable Energy Laboratory, Golden, CO, USA* **11:15 - 11:35 [O1B.01]** **Cultivation of filamentous algae for production of biofuels and animal feeds** John Benemann[1], Shelley Blackwell[1,2], Aubrey Davis[1,2], Tryg Lundquist[1,2] [1]*MicroBio Engineering Inc, San Luis Obispo, CA, USA.* [2]*California Polytechnic State University, San Luis Obispo, CA, USA* **11:35 - 11:55 [O1B.02]** **Production of recombinant protein from a novel strain of Chlamydomonas in an alkaline raceway pond** Frank Fields, Tressa Smalley, Yasin Torres-Tijie, Hunter Jenkins, Ashley Sproles, Anthony Berndt, Stephen Mayfield *University of California San Diego, La Jolla, CA, USA* **11:55 - 12:15 [O1B.03]** **Optimization of locally available natural resources for a sustainable blue bioeconomy: case studies in Pozo izquierdo (Canary Islands, Spain)** Flavio Guidi[1], Monserrat Alemán[1,2], Begoña Bustamante[1,2], Raúl Rios[1], Marianna Venuleo[1], Eduardo Portillo[1] [1]*Biotechnology dept., Instituto Tecnológico de Canarias SA, Pozo izquierdo, Spain.* [2]*University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain* **12:15 - 12:35 [O1B.04]** **Discover's long-term cultivation trials to advance the state of technology in algae R&D** John McGowen, Jessica Forrester, Jason Potts, Pedro Caballero, Emilie Smith, Aaron Geels, Raafay Jafri *Arizona State University, Tempe, AZ, USA*
12:35 - 13:35	**Lunch** Paniolo and Paniolo Terrace	
13:35 - 15:15	**Session 2A – Molecular Engineering and metabolic regulation of algae**	**Session 2B – Wastewater/Heterotrophic cultivation**

	Naupaka Ballroom, section IV Olaf Kruse Oral **13:35 - 13:55 [O2A.01]** **Towards synthetic diatoms: The *Phaeodactylum tricornutum* Pt-syn 1.0 project** Mark Pampuch, Emma Walker, Bogumil Karas *Western University, London, ON, Canada* **13:55 - 14:15 [O2A.02]** **Towards a potent green cell factory - CRISPR mediated strain engineering of *C. reinhardtii* for improved transgene expression and heterologous terpenoid production** Alexander Einhaus, Olaf Kruse *Bielefeld University, Bielefeld, Germany* **14:15 - 14:35 [O2A.03]** **Bioengineering *Phaeodactylum tricornutum*, a marine diatom, for cannabinoid biosynthesis** Elisa Fantino[1], Fatima Awwad[1], Natacha Mérindol[1], Aracely Maribel Diaz-Garza[2], Fatma Meddeb-Mouelhi[1,3], Isabel Desgagné-Penix[1,3] [1]*University of Québec in Trois-Rivières, Trois-Rivières, QC, Canada.* [2]*University of Québec in Trois-Rivières, Trois-Rivières, QC,, Canada.* [3]*Plant Biology Research Group, UQTR, Trois-Rivières, Canada* **14:35 - 14:55 [O2A.04]** **Engineering *Nannochloropsis oceanica* for the scalable production of diterpenoid compounds** Zhi-Yan Du *University of Hawai'i at Mānoa, Honolulu, HI, USA*	Naupaka Ballroom, sections I, II & III Sarah D'Adamo Oral **13:35 - 13:55 [O2B.01]** **Microalgal growth in aquaculture effluent: coupling biomass valorisation with nutrients removal** Ana F. Esteves[1,2,3], Sara M. Soares[1,2], Eva M. Salgado[1,2], Rui A. Boaventura[2,3], José C. Pires[1,2] [1]*University of Porto Laboratory for Process Engineering Environment Biotechnology and Energy, Porto, Portugal.* [2]*University of Porto Associate Laboratory in Chemical Engineering, Porto, Portugal.* [3]*University of Porto Laboratory of Separation and Reaction Engineering Laboratory of Catalysis and Materials, Porto, Portugal* **13:55 - 14:15 [O2B.02]** **Haematococcus pluvialis in fermentation** Robert Schurr, Jacob Wallace, Adelheid Kuehnle *Kuehnle AgroSystems, Inc.,, Honolulu, USA* **14:15 - 14:35 [O2B.03]** **Microalgae cultivation for the tertiary treatment of anaerobically digested abattoir effluent and biofertilizer production** Ashiwin Vadiveloo[1,2], Navid.R Moheimani[1,2], Parisa.A Bahri[3] [1]*Algae R&D Centre, Discipline of Environmental and Conservation Sciences, Murdoch University, Perth, Australia.* [2]*Centre for Water, Energy and Waste, Harry Butler Institute, Murdoch University, Perth, Australia.* [3]*Discipline of Engineering and Energy, Murdoch University, Perth, Australia* **14:35 - 14:55 [O2B.04]** **Sustainable transformation of industrial byproducts to high-value bioproducts using *Euglena gracilis*** Taeho Lee, Sunah Kim, Kiryeon Kim, Liu Fang, Keunho Kim, Jaecheul Yu *Pusan National University Department of Environmental Engineering, Busan, Republic of Korea* **14:55 - 15:15 [O2B.05]** **Application of algal cultivation technology to convert excess of farm waste nutrients to produce protein for animal feed** Alla Silkina, Mohamed Emran, Jose Gayo Pelaez *Swansea University, Swansea, UK*
15:15 - 15:45	**Coffee break** Naupaka Ballroom, sections V, VI & VII	

15:45 - 17:45	**Session 3A – Co-cultures & microbiomes** Naupaka Ballroom, section IV Christina Steadman Oral **15:45 - 16:05 [O3A.01]** **Biotic countermeasures ensuring resilient algal cultivation** Chuck Smallwood, Jenna Schambach, Jesse Cahill *Sandia National Laboratories, Albuquerque, NM, USA* **16:05 - 16:25 [O3A.02]** **Microbiome of *Nannochloris* sp. in algal cultivation ponds on Kauai, Hawaii, USA** Agnieszka Pinowska[1], Ariel Rabines[2], Lisa Zeigler Allen[2], Jesse C. Traller[3], Eric E. Allen[2], David Hazlebeck[3] [1]*Global Algae Innovations, Lihue, USA.* [2]*University of California San Diego, Scripps Institution of Oceanography, Marine Biology Research Division, La Jolla, CA, USA.* [3]*Global Algae Innovations, San Diego, USA* **16:25 - 16:45 [O3A.03]** **A novel cyanobacterium growth-promoting bacterium by high-throughput screening method** Pei Yu Tan[1], Ishida Masashi[2], Yuta Kato[3], Tai-Ying Chiou[2], Akihiro Hachikubo[2], Masaaki Konishi[2] [1]*Kitami Institute of Technology, Graduate School of Engineering, Kitami, Japan.* [2]*Kitami Institute of Technology, Kitami, Japan.* [3]*Kankyo Daizen Company, Limited, Kitami, Japan* **16:45 - 17:05 [O3A.04]** **Tiny helpers: Growth-promoting bacteria in co-culture with algae strains improve productivity** Sangeeta Negi, Kayla Kozisek, Austin Anderson, Brett Blackwell, Phillip Mach, Taraka Dale *Los Alamos National Laboratory, Los Alamos, NM, USA* **17:05 - 17:25 [O3A.05]** **Protection of commercially important phytoplankton from fungal infection using bacterial co-cultures** Elise Wilbourn, Pamela Lane, Deanna Curtis, Todd Lane *Sandia National Laboratories California, Livermore, CA, USA*	**Session 3B – Bioreactor & Process Design** Naupaka Ballroom, sections I, II & III Rene Wijffels Oral **15:45 - 16:05 [O3B.01]** **Aerosol-based Photobioreactors - A new generation of photobioreactors for the cultivation of phototrophic biofilms** Dorina Strieth, Jonas Kollmen, Judith Stiefelmaier *RPTU Kaiserslautern-Landau, Kaiserslautern, Germany* **16:05 - 16:25 [O3B.02]** **A new simple approach for the prediction and optimization of photobioreactor performances under both sunlight and continuous light conditions** Jeremy Pruvost[1], Rihab Rasheed[2], Khadija Samhat[1], Antoinette Kazbar[3], Hareb Al Jabri[2], Jean-Francois Cornet[4] [1]*Nantes University, Nantes, France.* [2]*Qatar University, Doha, Qatar.* [3]*Wageningen University & Research, Wageningen, The Netherlands.* [4]*University of Clermont Auvergne, Clermont Ferrand, France* **16:25 - 16:45 [O3B.03]** ***Haslea ostrearia* culture and marennine production: immersed membrane photobioreactor robustness towards biological variability** Elodie Pedron[1,2], Nesrine Gargouch[1], Réjean Tremblay[2], Jean-Sébastien Deschênes[2], Anthony Massé[1], Olivier Gonçalves[1] [1]*GEPEA, CNRS UMR 6144, Nantes Université, Oniris, Saint-Nazaire, France.* [2]*Institut des sciences de la mer de Rimouski, Université du Québec à Rimouski, Rimouski, Canada* **16:45 - 17:05 [O3B.04]** **PRIAM : controlled and intensified production of microalgae for high value products** Jérémy Pruvost[1], Laure Peruchon[2], Charlène Thobie[2], Cédric Brochier[2] [1]*GEPEA UMR CNRS 6144, Saint Nazaire, France.* [2]*Algolight, Saint Nazaire, France* **17:05 - 17:25 [O3B.05]** **From the hot springs to the table: Scaling up mixotrophic cultivation of *Galdieria sulphuraria*** Pedro Moñino Fernández, Marcel Janssen, Maria Barbosa *Wageningen University & Research, Wageningen, The Netherlands* **17:25 - 17:45 [O3B.06]**

	17:25 - 17:45 [O3A.06] **Effect of dissolved oxygen levels on photoautotrophic polyhydroxybutyrate production in mixed cyanobacteria consortium** Enrique Romero-Frasca, Germán Buitrón *Autonomous National University of Mexico - Juriquilla Campus, Queretaro, Mexico*	**Sequestering co2 using rotating alga biofilm system operated in wastewater tank** Vekatesh Balan[1], Weihang Zhu[2], Shan Xiaonan[2] [1]*University of Houston, Sugarland, USA.* [2]*University of Houston, Houston, USA*
17:45 - 18:45	**Welcome drinks reception & Poster session 1** Naupaka Ballroom, sections V, VI & VII Poster	

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08:15 - 08:20	**Welcome and Introduction** Naupaka Ballroom, section IV Travel award winner certificates to be presented.	
08:20 - 09:20	**Plenary 5 & 6** Naupaka Ballroom, section IV Taraka Dale Plenary **08:20 - 08:50 [PLE.05]** **Bioengineering microalgae for their application as green cell factories** Olaf Kruse, Thomas Baier, Alexander Einhaus *Bielefeld University, Center for Biotechnology CeBiTec, Bielefeld, Germany* **08:50 - 09:20 [PLE.06]** **Algae Foundation's algal-based education and workforce development; AlgaePrize 2022-2023. The development of the next generation of bioeconomy professionals** Ira Levine, Tiffany Cannis *Algae Foundation, Poland, USA*	
09:20 - 09:40	**Coffee break** Naupaka Ballroom, sections V, VI & VII	
09:40 - 11:05	**Session 4A-1 – Improving photosynthesis & biomass #1** Naupaka Ballroom, section IV Kyle Lauersen Oral **09:40 - 10:05 [INV.03]** **Genetic engineering of *N. oceanica* for tailoring lipid composition and metabolism** Sarah D'Adamo, Christian Sudfeld, Maria Barbosa, Rene Wijffels *Wageningen University & Research, Wageningen, The Netherlands* **10:05 - 10:25 [O4A-1.01]** **Increased Non-photochemical quenching in the *staygreen* mutant of *Haematococcus lacustris* improves high light resistance and astaxanthin production: high quality de novo genome assembly reveals the mutation introduced and a surprising diploid features of *Haematococcus* genome** Marcolungo Luca, Francesco Bellamoli, Michela Cecchin, Laura Girolomoni, Mattia Magagnotti, Matteo Paloschi, Marzia Rossato, Stefano Cazzaniga, Massimo Delledonne, Matteo Ballottari	**Session 4B-1 – Outdoor Cultivation #2** Naupaka Ballroom, sections I, II & III John Benemann Oral **09:40 - 10:05 [EO4B-1.01]** **Tropical macroalgae cultivation using deep sea water – prospects and challenges at NELHA (Natural Energy Laboratory of Hawaii Authority)** Simona Augyte, Daniel Delago, M.J. MacMahon, Makanahele Emmsley, Jennica Lowell-Hawkins, Neil Sims *Ocean Era, Inc., Kailua-Kona, USA* **10:05 - 10:25 [O4B-1.02]** **Microalgae cultivation at demonstration scale in raceway pond (300,000L): lesson learnt from the real environment** Faiz Ahmad Ansari, Ismail Rawat, Faizal Bux *Institute for Water and Wastewater Technology, Durban University of Technology, Durban, South Africa* **10:25 - 10:45 [O4B-1.03]** **Algal biomass productivity with direct, in-pond chemically enhanced air-CO2 transfer**

	University of Verona Department of Biotechnology, Verona, Italy **10:25 - 10:45 [O4A-1.02]** **Whole genome duplicated algae as a mechanism to increase the efficiency of algal production strains** Jennifer Pentz, Claire Sanders, Erik Hanschen *Los Alamos National Laboratory, Los Alamos, NM, USA* **10:45 - 11:05 [O4A-1.03]** **High pH-high alkalinity cultivation for high productivities and direct air capture** Robin Gerlach[1], Huyen Bui[1], Isaac Miller[1], Adrienne Arnold[1], Agasteswar Vadlamani[2], Brahmaiah Pendyala[2], Nazanin Nowzaridalini[2], Ross Carlson[1], Matthew Fields[1], Sridhar Viamajala[2] [1]*Montana State University, Bozeman, MT, USA.* [2]*The University of Toledo, Toledo, OH, USA*	Braden Crowe[1], Vicky Reyna[1], Kirk Moses[1], John Benemann[1], Charley Hibbeln[2], Scott Edmundson[2], Song Gao[2], Michael Huesemann[2] [1]*MicroBio Engineering Inc, San Luis Obispo, CA, USA.* [2]*Pacific Northwest National Laboratory Marine Sciences Laboratory, Sequim, WA, USA* **10:45 - 11:05 [O4B-1.04]** **Carbon utilization eficiency in outdoor raceway cultivation at AzCATI** Everett Eustance[1,2], John McGowen[2], Evan Taylor[3,2] [1]*Arizona State University Biodesign Swette Center for Environmental Biotechnology, Tempe, AZ, USA.* [2]*Arizona State University Arizona Center for Algae Technology and Innovation, Mesa, AZ, USA.* [3]*Burge Environmental, Tempe, USA*
11:05 - 11:15	**Comfort break** Naupaka Ballroom, sections V, VI & VII	
11:15 - 12:35	**Session 4A-2 – Improving photosynthesis & biomass #2** Naupaka Ballroom, section IV Ben Hankamer Oral **11:15 - 11:35 [O4A-2.01]** **From good, to better, to better: the stepwise improvement of biomass and lipid productivity, under pond-mimicking conditions in the industrially relevant diatom *Nitzschia inconspicua* str. hildebrandi, through directed evolution followed by plasma mutagenesis** Tyson Burch[1], Eric Hill[2], Amy Ashford[1], Jacob Tamburro[1], Raveendra Anangi[3], William Chrisler[2], Ryan McClure[2], Galen Dennis[1], Pavlo Bohutskyi[1], Soujanya Akella[2], Alaina LaPanse[1], Alex Beliaev[2], Jesse Traller[4], Agnieszka Pinowska[4], Sagadevan Mundree[3], Robert Speight[3], Matthew Posewitz[1] [1]*Colorado School of Mines, Golden, CO, USA.* [2]*Pacific Northwest National Laboratory, Richland, WA, USA.* [3]*Queensland University of Technology, Brisbane, Australia.* [4]*Global Algae Innovations, Lihue, USA*	**Session 4B-2 – Analytical Methods** Naupaka Ballroom, sections I, II & III Lieve Laurens Oral **11:15 - 11:35 [O4B-2.01]** **Non-destructive monitoring of biomass and astaxanthin in *Haematococcus pluvialis* biofilms: a reflectance spectroscopy approach** David Morgado[1], Andrea Fanesi[1], Thierry Martin[1], Sihem Tebbani[2], Olivier Bernard[3], Filipa Lopes[1] [1]*CentraleSupélec, Laboratoire Génie des Procédés et Matériaux (LGPM), Gif sur Yvette, France.* [2]*Université Paris-Saclay, CentraleSupélec, CNRS, Laboratoire des Signaux et Systèmes (L2S), Gif sur Yvette, France.* [3]*INRIA, Biocore, Sophia-Antipolis, France* **11:35 - 11:55 [O4B-2.02]** **Quantitative visualization of oxygen-sensitive nanosensors in microalgal-bacterial cultures to reveal drawdown and production gradients at the microscale** Ty Samo[1], Gregory Bude[1], Samuel Saccomano[2], Erin Nuccio[1], Ted Laurence[1], Kevin Cash[2], Peter Weber[1] [1]*Lawrence Livermore National Laboratory, Livermore, CA, USA.* [2]*Colorado School of Mines, Golden, CO, USA*

	11:35 - 11:55 [O4A-2.02] **Global pleiotropic genetic and metabolic controls are driving growth and carbon assimilation response to light for fast-growing single cell algae** Seth Steichen[1], Arnav Deshpande[1], Megan Mosey[1], Eric Knoshaug[1], Robert Nielsen[2], Joseph Weissman[2], Ruby Carrillo[2], Lieve Laurens[1] [1]*National Renewable Energy Laboratory, Golden, CO, USA.* [2]*ExxonMobil Research and Engineering Company Annandale, Annandale, NJ, USA* **11:55 - 12:15 [O4A-2.03]** **Molecular responses to desiccation stress on the bloom-forming alga Ulva stenophylloides (Chlorophyta; Ulvales): a "green tide" model in Chile** María Rosa Flores-Molina[1,2,3,4,5], Jorge Rivas[1,2,3,4], Geraldine Véliz[1,2,3,4], Paulina Vargas[1,2,3,4], Alejandra Núñez[1,2,3,4], Fadia Tala[4,6], Loretto Contreras-Porcia[1,2,3,4] [1]*Departamento de Ecología y Biodiversidad, Facultad de Ciencias de la Vida, Universidad Andrés Bello, Santiago, Chile.* [2]*Centro de Investigación Marina Quintay (CIMARQ), Facultad de Ciencias de la Vida, Universidad Andres Bello, Quintay, Valparaíso, Chile.* [3]*Center of Applied Ecology and Sustainability (CAPES), Santiago, Chile.* [4]*Instituto Milenio en Socio-Ecología Costera (SECOS), Santiago, Chile.* [5]*Magíster en Biotecnología y Ciencias de la Vida, Facultad de Ciencias de la Vida, Universidad Andrés Bello, Santiago, Chile.* [6]*Departamento de Biología Marina, Centro de I+D Tecnológico en Algas y Otros Recursos Biológicos (CIDTA) - Facultad de Ciencias del Mar, Universidad Católica del Norte, Coquimbo, Chile* **12:15 - 12:35 [O4A-2.04]** **Boosting productivity of a high-biomass alga *Picochlorum celeri*** Anagha Krishnan[1], Melissa Cano[1], Tyson Burch[1], Devin Karns[1], Joseph Weissman[2], Matthew Posewitz[1] [1]*Colorado School of Mines, Golden, CO, USA.* [2]*ExxonMobil Technology and Engineering Company, Annandale, USA*	**11:55 - 12:15 [O4B-2.03]** **Comparative study highlights the potential of spectral deconvolution for fucoxanthin screening in live Phaeodactylum tricornutum cultures** Sean Macdonald Miller *University of Technology Sydney, Broadway, Australia* **12:15 - 12:35 [O4B-2.04]** **Exploring the potential for online algal phenotyping using low-cost single cell imaging combined with deep learning techniques** Benjamin Gincley[1], Farhan Khan[1], Miguel Fuentes-Cabrera[2], Ameet Pinto[1] [1]*Georgia Institute of Technology, Atlanta, GA, USA.* [2]*Oak Ridge National Laboratory, Oak Ridge, TN, USA*
12:35 - 13:30	**Lunch** Paniolo and Paniolo Terrace	

13:30 - 15:35	**Session 5A – omics/modelling & bioinformatics** Naupaka Ballroom, section IV Shawn Starkenburg Oral 13:30-13:55 [INV04] Shawn Starkenburg Assembly and analysis of the 100% complete genome and methylome of Scenedesmus obliquus UTEX 3031 **13:30 - 13:55 [INV.04]** **Assembly and analysis of the 100% complete genome and methylome of *Scenedesmus obliquus* UTEX 3031** Shawn Starkenburg *Los Alamos National Laboratory Bioscience Division, Los Alamos, NM, USA* **13:55 - 14:15 [O5A.01]** **Algal metabolism by design: Improving lipid production in *Nannochloropsis* through genome-scale metabolic modeling** Sabine van Oossanen[1,2], Sarah D'Adamo[1], Maria Suarez-Diez[2], Vitor A.P. Martins Dos Santos[1], Maria J. Barbosa[1] [1]*Wageningen University & Research Dept. of Bioprocess Engineering, Wageningen, The Netherlands.* [2]*Wageningen University & Research Laboratory of Systems and Synthetic Biology, Wageningen, The Netherlands* **14:15 - 14:35 [O5A.02]** **Advanced metabolic modeling of *Chlamydomonas reinhardtii* in diel conditions predicts increased growth for knockout mutants** Sandra Gomez Romero[1], Alexander Metcalf[2], Nanette Boyle[2] [1]*Colorado School of Mines, Golden, USA.* [2]*Colorado School of Mines, Golden, CO, USA* **14:35 - 14:55 [O5A.03]** **Epigenetic processes in algae: implications for improved performance toward bioeconomy goals** Christina Steadman *Los Alamos National Laboratory, Los Alamos, NM, USA* **14:55 - 15:15 [O5A.04]** **Multi-omics investigation of salinity stress response in s*cenedesmus obliquus* UTEX393**	**Session 5B – Economic and Sustainability Analyses** Naupaka Ballroom, sections I, II & III Garrett Cole Oral **13:30 - 13:55 [EO5B.01]** **Spatiotemporal microalgae growth modeling coupled with techno-economic analysis and life cycle assessment of algae-to-fuel pathways for the production of renewable transportation fuels** Jonah Greene, David Quiroz, Samuel Compton, Jason Quinn *Colorado State University, Fort Collins, CO, USA* **13:55 - 14:15 [O5B.02]** **Investigating biorefinery methods on *Chromochloris zofingiensis*** Eleanor E Wood[1,2], Michael E Ross[1,3], Sebastien Jubeau[2,4], Valeria Montalescot[4], Michele S Stanley[1] [1]*Scottish Association for Marine Science, Oban, UK.* [2]*Xanthella Ltd, Scotland, UK.* [3]*Culture Collection of Algae and Protozoa, Scotland, UK.* [4]*Cargill, France* **14:15 - 14:35 [O5B.03]** **Realizing algae value chains in arid environments: an Arabian Peninsula perspective** Kira Schipper[1], Hareb Al Jabri[1], René H. Wijffels[2,3], Maria J. Barbosa[2] [1]*Qatar University, Doha, Qatar.* [2]*Wageningen University & Research, Wageningen, The Netherlands.* [3]*Nord University, Bodø, Norway* **14:35 - 14:55 [O5B.04]** **Economic and life cycle assessment of direct air capture for algal systems using moisture swing sorbents** Garrett Cole[1,2], Ani Nazari[3], Wim Vermass[3], Jason Quinn[1,2] [1]*Sustainability Science LLC, Steamboat Springs, USA.* [2]*Colorado State University, Fort Collins, CO, USA.* [3]*Arizona State University, Tempe, AZ, USA* **14:55 - 15:15 [O5B.05]** **Life cycle assessment of microalgal cultivation medium: Biomass, glycerol, and beta-carotene production by *Dunaliella salina* DF 15 and *Dunaliella tertiolecta* CCAP 19/30** Gleison Celente[1,2], Rosana Schneider[2], Jennifer Julich[2], Tiele Rizzetti[2], Eduardo Lobo[2], Yixing Sui[1] [1]*University of Greenwich Faculty of Engineering and Science, Chatham, UK.* [2]*University of Santa Cruz do Sul, SANTA CRUZ, Brazil* **15:15 - 15:35 [O5B.06]**

	Colin Kruse[1], Sara Calhoun[2], Bishoy Kamel[2], Leo Baumgart[2], Ian Blaby[2], Andrew Gutknecht[3], Jim Umen[4], Brady Anderson[5], Scott Edmundson[5], Juergen Polle[6], Michael Huesemann[5], Ronan O'Malley[2], Igor Grigoriev[2,7], Shawn Starkenburg[1] [1]*Los Alamos National Laboratory Bioscience Division, Los Alamos, NM, USA.* [2]*DOE Joint Genome Institute, Walnut Creek, CA, USA.* [3]*Pacific Northwest National Laboratory Marine Sciences Laboratory, Sequim, WA, USA.* [4]*Donald Danforth Plant Science Center, Saint Louis, MO, USA.* [5]*Pacific Northwest National Laboratory, Coastal Sciences Division, Sequim, WA, USA.* [6]*Brooklyn College Department of Biology, Brooklyn, NY, USA.* [7]*University of California Berkeley Department of Plant and Microbial Biology, Berkeley, CA, USA* **15:15 - 15:35 [O5A.05]** **A generalized method for enhancing microalgal biomass production: Taguchi-based mathematical modeling of nutritional and growth kinetics - A case study on *Tetradesmus obliquus*** Jihed Bentahar, Jean-Sébastien Deschênes *University of Quebec at Rimouski, Rimouski, QC, Canada*	**Techno-economic analysis of in storage production of succinic acid, its recovery from algae biomass and its impact on minimum biomass selling price** Bradley Wahlen[1], Chelsea St. Germain[1], Lynn Wendt[1], Birendra Adhikari[1], Hongqiang Hu[1], John McGowen[2] [1]*Idaho National Laboratory, Idaho Falls, ID, USA.* [2]*Arizona State University Arizona Center for Algae Technology and Innovation, Mesa, AZ, USA*
15:35 - 16:00	**Coffee break** Naupaka Ballroom, sections V, VI & VII	
16:00 - 17:20	**Session 6A – Optimizing Selection Pressures & Pest Management to Maximize Algal Biomass Yield (OSPREY)** Naupaka Ballroom, section IV Taraka Dale Oral **16:00 - 16:20 [O6A.01]** **Site-specific factors override local climatic conditions in determining microalgae productivity in open raceway ponds** Isidora Echenique-Subiabre[1], Jonah M. Greene[2], Aidan Ryan[1], Heather Martinez[3], Marcela Balleza[4,5], Julia Gerber[4], Ahlem Jebali[3], Stephanie Getto[6], Charles J. O'Kelly[4], Shovon Mandal[7], Jason C. Quinn[2], Shawn R. Starkenburg[8], Alina A. Corcoran[3], Jonathan B. Shurin[1] [1]*University of California San Diego, La Jolla, CA, USA.* [2]*Colorado State University Department of Mechanical Engineering, Fort Collins, CO, USA.* [3]*New Mexico Consortium, Los Alamos, NM, USA.*	**Session 6B – Government support for mission-driven innovation in the algae sector** Naupaka Ballroom, sections I, II & III Daniel Fishman Oral 16:00-16:20 Anusuya Willis, Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian National Algae Culture Collection 16:20-16:40 Chris Cassidy, U.S. Department of Agriculture Rural Development 16:40-17:00 Anoushka Concepcion, Connecticut Sea Grant and Department of Extension 17:00-17:20 Aaron Fuller, U.S. Department of Energy Fossil Energy and Carbon Management **16:00 - 16:20 [O6B.01]** **The australian national algae culture collection, CSIRO** Anusuya Willis

	[4]*Cyanotech Corp, Kailua Kona, HI, USA.* [5]*Symbrosia, Kailua Kona, USA.* [6]*New Mexico State University, Las Cruces, NM, USA.* [7]*The Energy and Resources Institute, New Delhi, India.* [8]*Los Alamos National Laboratory Bioscience Division, Los Alamos, NM, USA* **16:20 - 16:40 [O6A.02]** **Assessment of phenotype stability in *Nannochloropsis* through time in response to different cultivation practices** Ahlem Jebali[1], Monica R. Sanchez[2], Isidora Echenique[3], Heather Martinez[1], Julia Gerber[4], Stephanie Getto[5], Marcela Balleza[4], Jakob Nalley[6], Charles J. O'Kelly[7], F. Omar Holguin[5], Jonathan Shurin[3], Shawn R. Starkenburg[2], Alina A. Corcoran[1] [1]*New Mexico Consortium, 4200 W. Jemez Rd, Suite 301, Los Alamos 87544, USA.* [2]*Los Alamos National Laboratory, Bikini Atoll Rd. SM-30, Los Alamos 87545, USA.* [3]*University of California San Diego, 9500 Gilman Dr., Dept 0116, La Jolla, CA 92093, USA.* [4]*Cyanotech corporation, 73-4460 Queen Kaahumanu Highway, Suite 102,, Kailua Kona 96740, USA.* [5]*New Mexico State University, 1175 Horseshoe Dr. 88003, Las Cruces 88003, USA.* [6]*Qualitas Health, 421 E. Imperial St, Imperial, TX 79743, USA.* [7]*Cyanotech Corporation, 73-4460 Queen Kaahumanu Highway, Suite 102,, Kailua Kona 96740, USA* **16:40 - 17:00 [O6A.03]** **Trait drift in the field and laboratory: Characterizing microbial community composition and genotype shifts through time** Monica Sanchez[1], Ahlem Jebali[2], Isidora Echenique[3], Ellen Denning[4], Marcella Balleza[5], Julia Gerber[5], Heather Martinez[2], F. Omar Holguin[6], Jakob Nalley[7], Charley O'Kelly[5], Jonathan Shurin[3], Alina A. Corcoran[2], Shawn Starkenburg[4] [1]*Sandia National Laboratories, Albuquerque, NM, USA.* [2]*New Mexico Consortium, Los Alamos, NM, USA.* [3]*University of California San Diego, La Jolla, CA, USA.* [4]*Los Alamos National Laboratory, Los Alamos, NM, USA.* [5]*Cyanotech Corp, Kailua Kona, HI, USA.* [6]*New Mexico State University, Las Cruces, NM, USA.* [7]*Qualitas Health, Imperial, USA* **17:00 - 17:20 [O6A.04]**	*Commonwealth Scientific and Industrial Research Organisation, Hobart, Australia* **16:20 - 16:40 [O6B.02]** **TBD** Chris Cassidy *U.S. Department of Agriculture Rural Development* **16:40 - 17:00 [O6B.03]** **An overview of recent NOAA investments in macroalgae aquaculture** Anoushka Concepcion[1], Chuck Weirich[2] [1]*Connecticut Sea Grant, Groton, CT, USA.* [2]*NOAA Sea Grant, Silver Spring, USA* **17:00 - 17:20 [O6B.04]** **TBD** Aaron Fuller *U.S. Department of Energy Fossil Energy and Carbon Management*

	Improvement of performance and composition in field adapted *Nannochloropsis oceanica* strain Harmanpreet Kaur[1], Monica Sanchez[2], Heather Martinez[3], Marwah Neyaz[1], Ahlem Jebali[3], Shawn R. Starkenburg[2], Alina A. Corcorran[3], F. Omar Holguin[1] [1]*New Mexico State University, Las Cruces, USA.* [2]*Los Alamos National Laboratory, Los Alamos, USA.* [3]*New Mexico Consortium, Los Alamos, USA*	
17:20 - 18:20	**Poster session 2** Naupaka Ballroom, sections V, VI & VII Poster	
18:20 - 18:30		
18:30 - 21:30	**Conference Dinner (optional ticketed event)**	

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08:15 - 08:20	**Welcome and Introduction** Naupaka Ballroom, section IV	
08:20 - 09:20	**Plenary Session 7&8** Naupaka Ballroom, section IV Rene Wijffels Plenary **08:20 - 08:50 [PLE.07]** **The promise of Algae: Manifesting our industries future** Valerie Harmon *Harmon Consulting Inc., Kamuela, USA* **08:50 - 09:20 [PLE.08]** **Design and development of next-generation light driven biotechnologies** Ben Hankamer, Ian Ross, Melanie Oey, Juliane Wolf, John Roles, Hong Phuong Le, Farrah Blades *The University of Queensland Institute for Molecular Bioscience, Brisbane, Australia*	
09:20 - 10:20	**Coffee break & poster session 3** Naupaka Ballroom, sections V, VI & VII Poster	
10:20 - 11:45	**Session 7A -1 – High value products #1** Naupaka Ballroom, section IV Matteo Ballottari Oral **10:20 - 10:45 [INV.05]** **Engineering cyanobacteria for high yield secretion of diacids** Ryan Simkovsky *Algenesis Materials, Cardiff, USA* **10:45 - 11:05 [O7A-1.01]** **Carbonization of extracted algal solids to high-quality conductive carbon** Ali Chamas, Marcus Condarcure, Tobias Hull, Skylar Schutter, Stefanie Van Wychen, Tao Dong, Matthew Fowler, Lieve Laurens, Jacob Kruger *National Renewable Energy Laboratory, Golden, CO, USA* **11:05 - 11:25 [O7A-1.02]** **Improved *9-cis/all-trans* isomeric ratio in β-carotene overproduction from *Dunaliella salina*** Yixing Sui[1], Gleison Celente[1,2], Mathilde Lemaire Galipienso[3], Nicole López Pasamar[3], Pablo Garcia-Trinanes[1], Patricia Harvey[1]	**Session 7B -1–Separation and Extraction** Naupaka Ballroom, sections I, II & III Nilusha Sudasinghe Oral **10:20 - 10:45 [EO7B-1.01]** **Mechanistic study of the deamination of algal biomass in the supercritical carbon dioxide-subcritical water system using aspartic acid as a model compound** Taisei Nagamine, Armando Quitain, Yusuke Inomata, Tetsuya Kida *Kumamoto University, Kumamoto, Japan* **10:45 - 11:05 [O7B-1.02]** **Recirculation of microalgae growth medium via membrane harvesting** Siti Suhailah Rosli[1], Pierre Le-Clech[2], Rita Henderson[1] [1]*Algae & Organic Matter Laboratory, School of Chemical Engineering, University of New South Wales, Sydney, Australia.* [2]*UNESCO Centre for Membrane Science & Technology, School of Chemical Engineering, University of New South Wales, Sydney, Australia* **11:05 - 11:25 [O7B-1.03]** **Flocculation of oleaginous green algae with Mortierella alpina fungi**

	[1]*University of Greenwich Faculty of Engineering and Science, Chatham, UK.* [2]*University of Santa Cruz do Sul, SANTA CRUZ, Brazil.* [3]*Universitat Ramon Llull IQS, Barcelona, Spain* **11:25 - 11:45 [O7A-1.03]** **Carbon to X: Economically feasible biological CCUS by microalgae towards CO2-derived bioplastics** Sang Jun Sim *Korea University, Seongbuk-gu, Republic of Korea*	Ty Shitanaka[1], Lauren Higa[1], Abigail Bryson[2], Conor Bertucci[2], Natalie VandePol[2], Ben Lucker[3], Samir K. Khanal[1,4], Gregory Bonito[2], Zhi-Yan Du[1] [1]*University of Hawai'i at Mānoa Department of Molecular Biosciences and Bioengineering, Honolulu, HI, USA.* [2]*Michigan State University Department of Plant Soil and Microbial Sciences, East Lansing, MI, USA.* [3]*Trait Biosciences, Los Alamos, USA.* [4]*University of Hawai'i at Mānoa Department of Civil and Environmental Engineering, Honolulu, HI, USA* **11:25 - 11:45 [O7B-1.04]** **Novel approaches for in situ extraction of heterologous metabolites from living microalgae cultures** Sebastian Overmans, Kyle Lauersen *King Abdullah University of Science and Technology, Division of Biological and Environmental Science and Engineering, Thuwal, Saudi Arabia*
11:45 - 11:55	**Comfort break** Naupaka Ballroom, sections V, VI & VII	
11:55 - 12:55	**Session 7A -2 – High value products #2** Naupaka Ballroom, section IV Ryan Simkovsky Oral **11:55 - 12:15 [O7A-2.01]** **Optimization of spirulina for biomanufacturing and the delivery of protein therapeutics** Mark Heinnickel *Lumen Bioscience Inc, Seattle, WA, USA* **12:15 - 12:35 [O7A-2.02]** **Sustainable production of chemical-free geraniol: heterologous expression of early terpenoid pathway enzymes in *Chlamydomonas reinhardtii*** Federico Perozeni[1], Edoardo Ceschi[1], Davide Slaghenaufi[1], Thomas Baier[2], Stefano Cazzaniga[1], Maurizio Ugliano[1], Matteo Ballottari[1] [1]*University of Verona, Verona, Italy.* [2]*Bielefeld University Center for Biotechnology, Bielefeld, Germany* **12:35 - 12:55 [O7A-2.03]** **Macroalgae as source of formic acid and proteins: application of the oxfa-process for a complete biorefinery approach** Jakob Albert, Stefanie Wesinger, Jan Krueger *Universität Hamburg, Hamburg, Germany*	**Session 7B -2 – Conversion** Naupaka Ballroom, sections I, II & III Tao Dong Oral **12:15 - 12:35 [O7B-2.02]** **CO2-H2O based green engineering for algal biomass valorization** Armando Quitain *Kumamoto University, Kumamoto, Japan* **12:35 - 12:55 [O7B-2.03]** **Conversion of algal carbohydrates to 5-HMF using the microwave-irradiated graphene oxide under supercritical CO2 conditions** Sumire Ichimaru, Jonas Karl Christopher Agutaya, Armando Quitain, Yusuke Inomata, Tetsuya Kida *Kumamoto University, Kumamoto, Japan*

12:55 - 13:00	**Closing ceremony** Naupaka Ballroom, section IV Taraka Dale, Olaf Kruse Brief wrap up at end