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December 03-04, 2018 Sao Paulo, Brazil

Keynote Forum

Day 1

Olga Potapova, J Biotechnol Biomater 2018, Volume: 8
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Olga Potapova

Cureline Inc., USA

Challenges of international human biospecimen biobanking for biomedical research in the era of personalized medicine

Translational medical research, including the development of new drugs and novel biomarkers, companion diagnostics and, overall, personalized approach in medicine. Biomedical research requires a continuous supply of legally and ethically acquired high-quality human biospecimens and associated clinical and molecular data. Important topics of human tissues research include (a) Building an effective value chain framework for biobanking. This is a complicated process and this is why the pharma industry prefers outsourcing the procurement of HBS (human biospecimens). (b) Global regulatory compliance and ethical/legal issues on global human tissue procurement for research purposes, including international disparities in regulations on the use of human materials for biomedical research. (c) Creating fit-for-purpose collection protocols and standardized Informed Consent Forms allowing a wide range of applications for collected HBS (NGS, single cells analysis, etc.), including future technological advances. (d) Creating and managing an effective global clinical network. (e) Clinical data collection and management, HIPAA Privacy Rules for research specimens, variabilities in the international regulations. (f) Cost of biobanking, available resources and strategies for creating a self-sustaining biorepository. (g) Public resources for data and protocols: TCGA (The Cancer Genome Atlas); CPTAC (Clinical Proteomic Tumor Analysis Consortium): ISBER, CAP, NCI.

Biography

Olga Potapova is a life sciences executive with extensive scientific and project management expertise in translational oncology, diagnostics and laboratory medicine. She worked on the development of targeted therapies (SUTENT) and human prenatal diagnostic tests (Cystic Fibrosis); coordinated major international collaboration projects with an emphasis on RTK signal transduction research, human biospecimen procurement, preclinical and early clinical development. Currently, she leads Cureline group, a global CRO with emphasis on HBS biobanking, laboratory services and glyuco biomarkers. She has received multiple AACR/AFLAC awards, NIH and NATO fellowships and has published multiple scientific papers in peer-reviewed journals. Since 2010, she has been a Principal Investigator for The Cancer Genome Atlas (TCGA) program and since 2015 for the Clinical Proteomic Tumor Analysis Consortium (CPTAC) program (both NCI, NIH). She has advanced degrees in Physics and in Molecular Genetics/Biochemistry.

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Anuj Kumar Chandel, J Biotechnol Biomater 2018, Volume: 8
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Anuj Kumar Chandel

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Sugar is the new oil: Transitioning petroleum economy to bio-economy

Sugars (1G+2G) are being touted as the new oil in the future. Moving from petroleum-products to biomass-based products is considered as a paradigm shift for the virtual development of biorefinery. The biorefinery is a sustainable platform for the production of the myriad of bioproducts including biofuels/bioenergy to cater the societal demands of energy and chemicals at the upfront. The establishment of biorefineries is inevitable for the development of a sustainable, energy independent society while keeping the environment safe and clean. Several big industries such as DSM, Dow-Dupont, BASF, Novozymes, Braschem, Clariant, Abengoa and others are aggressively venturing into the development of bio-based products from lignocellulosic biomass eventually strengthening the economy. In reality, concerted efforts for the technological solution and financial inclusions are required to develop the robust pitch for cost-competitive production of biomass-derived fuels and chemicals. For the technological point of view, process improvement in process engineering employing industrially relevant parameters and real techno-economic analysis are pivotal for the cost competitive production of renewable fuels and chemicals. This presentation will elaborate on the potential of biorefineries, global bioeconomy, technology readiness level of some interesting biochemicals and key challenges in 2G sugars recovery and biofuels and biochemical production at large scale operations under biorefinery concept.

Biography

Anuj Kumar Chandel is a USP-CAPES visiting Professor and Researcher of Industrial Biotechnology at Engineering School of Lorena, University of Sao Paulo (USP), Brazil. He received his Bachelor's, Master's and PhD degrees from Meerut University, IIT-Roorkee and JNT University, Hyderabad, India, respectively. Before joining USP-Lorena, he has worked as a Lead Scientist at Sugarcane Technology Centre (CTC)-Piracicaba, Brazil and was responsible for scientific leadership for deployment of cellulosic ethanol process at demonstration plant and scale-up activities. Overall, he has 17 years' research experience working in industries and Universities on biofuels production, industrial enzymes production and membrane-based separations. He has published 58 articles in peer-reviewed journals and 30 book chapters. He has also co-edited 7 books on Xylitol, Sustainable Degradation of Lignocellulosic Biomass, Brazilan Biofuels Development, Indian Biofuels Development, Extremophiles, Sugarcane biorefinery and Sustainable sources of energy: Enzymatic resources. His contributions span the biomass science, biotechnology and policy domains and include sustainable development of biofuels and biochemicals under biorefinery concept. A frequently invited presenter on technical and strategic aspects of biomass energy, in prominent forums and International conferences.

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Kathleen Hefferon

University of Toronto, Canada

Production of a universal plant-based substrate system for cellulase activity assays

Cellulases and other cell wall degrading enzymes are currently being engineered with improved traits for application in the breakdown of lignocellulosic biomass. The majority of assays with these 'designer' enzymes have been carried out using synthetic substrates such as crystalline bacterial micro cellulose (BMCC). The use of synthetic substrates may not reflect the actual action of these cellulases on real plants. In the following study, suspension cell walls from several plant species were examined as possible alternatives for synthetic cellulose substrates. The results suggest that isolated plant cell walls can be used to reproducibly assay for cellulase activity.

Biography

Kathleen Hefferon has completed her PhD from the University of Toronto and postdoctoral studies from the Department of Food Sciences, Cornell University. She is the Fulbright Canada Research Chair of Global Food Security. She is currently on Faculty at Cornell University and is writing a second edition to her book "Biopharmaceuticals in Plants". She has published in multiple research journals and has edited 6 books. She just completed as editor of an Encyclopedia on Food Security and Sustainability. .

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Suresh K Alahari, J Biotechnol Biomater 2018, Volume: 8
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Suresh K Alahari

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MicroRNAs from bench to bedside

MicroRNAs have recently been reported to be present in human blood, stably circulating under the aegis of protein and lipid carrier forms. While the origins and purpose of circulating miRNAs remain unclear, considerable efforts have been made toward evaluating their potential for use as a practical and informative disease biomarker. Published evidence suggests that the content and composition of circulating miRNA in healthy individuals may be distinctly altered among those with certain diseases, including cancer. Given the urgent need for improved screening tests for human cancer, we wished to investigate whether serum miRNA could be used in breast cancer patients as a novel diagnostic and prognostic marker. Thus, we procured serum samples from over 100 breast cancer patients at various stages of management (including at the time of diagnosis, after endocrine therapy but prior to surgery and following completion of all management). Our goal here was to identify whether a particular miRNA or panel of miRNAs is able to detect the presence of breast cancer and whether it is likely to respond to a particular course of treatment better than others. An RNA-seq analysis of some samples revealed multiple miRNAs were altered between breast cancer and control patients. In triple negative breast cancer (TNBC) patients, miR-223 and miR-23a (among others) were increased significantly, while miR-375 and miR-10b were decreased. Remarkably, these trends were reversed in the samples from the very same patients following treatment. The return of these cancer-associated miRNAs to normal levels in response to treatment raises the possibility that these miRNAs could be tumor-derived. In summary, we believe these results need further investigation, currently validating the current RNA-seq findings by qRT-PCR. Additionally, we wish to explore whether these miRNAs are associated with patient outcomes as we continue to monitor the progress of patients during follow up.

Biography

Suresh K Alahari obtained his Bachelor of Science in Biology and Master of Science in Human Genetics from India in 1983 and 1986 respectively. His PhD in Molecular Biology was awarded by Drexel University, Philadelphia in the year 1994. From 1994 to 1998, he did a Post-doctoral Fellowship at the University of North Carolina at Chapel Hill. Since 1998, he has been a faculty member at the University of North Carolina and in 2004 joined the LSUHSC as Associate Professor of the Department of Biochemistry. During his tenure at the University of North Carolina, he discovered a novel protein that he termed, Nischarin. He has published several papers describing the function of Nischarin. He has served on Editorial Review Boards and studies sections. In addition, he availed Visiting Professorships at the University of Pennsylvania, Philadelphia and Rockefeller University, New York.

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Sonia Marli Zingaretti, J Biotechnol Biomater 2018, Volume: 8
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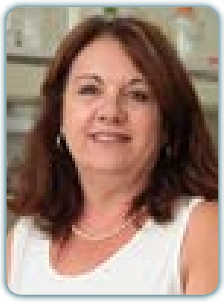

Sonia Marli Zingaretti

Ribeirao Preto University, Brazil

Molecular mechanisms of sugarcane response to abiotic stress

Sugarcane (*Saccharum* spp.) as an important source of sugar and ethanol became the third most produced commodities in the world (1.4G). In this context, Brazil figure as a major sugarcane producer (500M tons) followed by India (300M), China, Thailand and others. The projections, based on the worldwide increasing demand for food and energy, are that sugarcane global production will increase by 21% until 2024. Among the main factors that can affect agricultural productivity, soil has fundamental importance since it offers not only physical support but also water and the necessary nutrients for plant growth. Aluminum (Al) together with silicon and oxygen are the three most abundant elements in earth crust. Although metallic elements are required for plant growth, aluminum ions (Al^{+3}) can be considered one of the major abiotic factors affecting agriculture productivity. Al is a non-essential element found naturally in the soil but it is toxic and its bioavailability is highest on acidic soils (pH of 5.5 or lower), resulting in inhibition of root growth, architecture alteration and elongation disruption. Plants under stress conditions can undergo gene expression changes or post-transcriptional gene regulation that can led to resistance. Our goal is to understand the molecular mechanisms of abiotic stress tolerance in sugarcane and the role of miRNA's in this response to aluminum stress. To identify the miRNAs involved in the aluminum stress response four-miRNA libraries, generated from the sugarcane roots of two contrasting sugarcane cultivars CTC-2 (Tolerant Aluminum Stress) and RB-855453 (Sensitive Aluminum Stress), under aluminum stress for seven days, were sequenced using Illumina technology. By comparing miRNA libraries sequences from the two contrasting cultivars, we were able to identify 394 differentially expressed miRNAs. The contrast of the cultivars seen in the field is reflected in the microtranscriptome with opposing expression profile. For the tolerant cultivar (TAS) we observed that while 64% of microRNAs are been induced in the sensitive the majority of microRNAs (85%) are been repressed under aluminum stress condition.

Biography

Sonia Marli Zingaretti is an Agricultural Engineer with a Master in Genetics and Plant Breeding and a PhD in Genetics from FMRP-USP. Full Professor at the Biotechnology Unit in the University of Ribeirao Preto, where she has been working in the Graduate Program in Biotechnology since 2005, responsible for Biotechnology, Genomics and Proteomics, she is also a member of the Graduate Committee. She works concurrently also in the Master's/PhD program in Genetics and Plant Breeding at FCAV-UNESP, as Professor responsible for the disciplines of Plant Biotechnology and Fundamentals of Molecular Biology. From 2001 to 2006 she was a curator of the BCCCenter (Brazilian Clone Collection Center) a FAPESP / UNESP project, in Brazil. She is also a reviewer of several international journal articles and ad hoc advisor of projects submitted to FAPESP and CNPq. Performance in Molecular Biology of plants, especially in the analysis of differential gene expression linked to biotic and abiotic stresses. She has published more than 53 papers in reputed journals and has been serving as an editorial board member of repute.

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