World Biotechnology 2017

2nd World Biotechnology Congress

December 04-05, 2017 | Sao Paulo, Brazil

Keynote Forum

Day 1

Meghana Joshi, J Biotechnol Biomater 2017, 7:6 (Suppl)
DOI: 10.4172/2155-952X-C1-084

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Meghana Joshi

Keck Graduate Institute, USA

A novel education model to fit the future of biotechnology

The pharmaceutical and biotechnology industry continues to experience an exciting growth with the advancement of novel technologies and drug products for safe and effective therapies of different diseases. As the industry takes on interesting endeavors in drugs and biologics, digital health and analytics, there is an utmost need for trained personnel to take translational research from bench to bedside and to pave the way in treating patients using personalized, preventive and precision medicine. According to the US Department of Labor, the life sciences occupation is projected to grow up to 8 percent by 2024. Over the last decades, the existence of a strong cultural gap between academia and industry as a barrier for collaboration has been discussed across the globe. It has significantly delayed the translation of academic research into novel therapies for patients. The graduate students in academia are mainly focused on basic science concepts and research with very little training in applying those concepts towards solving real-world problems. To bridge that gap between academia and industry, it is important to understand how the pharmaceutical industry works and the different aspects involved in taking a drug from discovery to market. Understanding the challenges that the industry faces will help students become effective managers and leaders in different functions such as R&D, Regulatory, Marketing and others within the industry. There are currently many such models in place to help bridge this gap between academia and industry. Keck Graduate Institute has trained students using one such model for the last 20 years. I have designed and implemented a few programs in collaboration with a global biopharmaceutical company, Biocon. With the success of these kind of novel programs, industry and academia can come together and adopt some elements of the Biocon-KGI program to train future leaders of the biopharmaceutical industry.

Biography

Meghana Joshi is the Program Director for Biocon-KGI certificate programs based at Keck Graduate Institute, California, USA. She has received her PhD in Biological Sciences from the University of Illinois at Chicago, followed by Post-doctoral experience at M D Anderson Cancer Center, Houston, Texas and Columbia University, New York. Thereafter, she has completed the KGI Postdoctoral Professional Master's degree, a program training PhD's to work in the Biotech industry. She teaches a course in Pharmaceutical Drug Development and works as a Consultant to Life Science companies to help them conduct market research and to help in licensing products and forming collaborations, particularly in the area of biosimilars.

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Jean Pierre Leburton, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Jean Pierre Leburton

University of Illinois, USA

Genomics and epigenetics with 2D material nano-electronics

In this talk, I will review some basic properties of cell biology, and present a scenario that integrates biology with MOS nano-electronics for genomics and bio-medical applications. This scenario involves probing the electrical activity of biomolecules passing through a nanopore, in a semiconductor membrane. Among solid-state porous membranes the use of the single-atom thickness of graphene or novel 2D materials like MoS2, are ideally suited for DNA, RNA or proteins sensing as they can scan molecules passing through a nanopore at high resolution. Additionally, unlike most biological membranes, these new materials are electrically active, which can be exploited to manipulate in addition to sense biomolecules. We will describe a membrane designed as a quantum point contact FET as a viable device for electronically and optically sensing bio-molecules for applications in genomics and cancer detection.

Biography

Jean Pierre Leburton has joined the University of Illinois in 1981 from Germany, where he has worked as a Research Scientist with the Siemens A G Research Laboratory in Munich. In 1992, he held the Hitachi LTD Chair on Quantum Materials at the University of Tokyo, and was a Visiting Professor in the Federal Polytechnic Institute in Lausanne, Switzerland in 2000. He is involved with research in nanostructures modeling and in quantum device simulation. His present research interest encompasses non-linear transport in quantum wires and carbon nanotubes, and molecular and bio-nanoelectronics. He is the author and co-author of more than 300 technical papers in international journals and books, and served in numerous conferences committees.

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Xiaohua He, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Xiaohua He

USDA, WRC, ARS, USA

Exploring detection methods for foodborne pathogens: Shiga toxin-producing *E. coli* as an example

Foodborne pathogens are a growing concern for human health worldwide. The Center for Disease Control and Prevention estimated that there are approximately 48 million new cases of foodborne illness each year, resulting in 128,000 hospitalizations and 3,000 deaths in the United States alone. To ensure food safety, demands for methods that are rapid and reliable for detecting foodborne pathogens are increasing. As improvements in biotechnology, new molecular methods, such as DNA-based PCR and antibody-based immunoassays are being developed and improved continuously. These methods enable faster and more sensitive detection of foodborne pathogens. However, challenges in food matrix effect, sample preparation, detection and recovery of viable cells, and reducing test time still exist. This presentation reviews the evolution of detection methods for foodborne pathogens using Shiga toxin *E. coli* as an example, discusses the deficiencies of currently available methods in relation to the industry's needs.

Biography

Xiaohua He is a Research Molecular Biologist at USDA ARS, WRRC, Albany, California. She has received her PhD in Plant Pathology from University of California, Riverside, and had Postdoctoral experience at Purdue and Cornell Universities. Her research focuses on development of molecular tools and technologies for sensitive detection of zoonotic pathogens and toxins in food, environment and clinical samples; investigation of toxin synthesis and mechanisms of host cell injury by toxins. She has received the 2015 USDA Federal Laboratory Consortium, Far West Region, Outstanding Technology Development Award for her contribution to the development of novel monoclonal antibodies against a broad range of Shiga toxins. She has served as Academic Editor and Editorial Board Member of leading journals. Her work has involved significant international collaborations, with applications to food safety and defense. She is an author/inventor of over 80 publications and patents, with 14 technologies licensed to industry.

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Keynote Forum

Day 2

Yinghua Huang, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Yinghua Huang

Oklahoma State University, USA

The forefront of scientific progresses in plant science: Next generation crop breeding

Great success in crop improvement contributed to the green revolution, by creating high-yielding varieties/hybrids; but modern crop improvement programs face new challenges because of limited genetic resources for breeding demand, complexity of certain traits, demanding for fast breeding rates and novel approaches for crop improvement. Fortunately, rapid advances in molecular biology and quick development of genomic technologies have tremendously expanded our abilities to analyze and understand plant genomes and to reduce the gap existing between genotype and phenotype. Moreover, the recent completion of whole genome sequencing of many crop species opened the doors for more efficient gene discovery and offers us the opportunities to translate the genome information into improvement of crops through novel breeding strategies. This paper reviews the advances of our knowledge in plant biology and these cutting-edge technologies, such as development and utilization of the genomic resources for gene discovery, genotyping and QTL (quantitative trait loci) identification, development of DNA markers for the next-generation genotyping and marker-assisted selection, next-generation sequencing and genomics-assisted breeding (GSB), gene expression profiling and dissecting the networks of gene regulation in crop plants, plant functional genomics, molecular breeding and genetic enrichment of crops through transgenic approach. Furthermore, the latest invented technology, called "genome editing", represents an advanced plant breeding tool and holds tremendous promise and potential to facilitate precision crop breeding. It will also explore case studies of genotyping by sequencing applications to several crops differing in genome size, organization and breeding systems. Finally, the paper will demonstrate the application of those new tools in crop improvement in terms allowing more precise and quicker manipulation of crop genomes, more easily measuring traits and adding beneficial genes to various crop species around the world

Biography

Yinghua Huang is a Research Geneticist for USDA and serves as the Lead Scientist for the Plant Genetics Program, and an Adj. Professor of Oklahoma State University. His scientific background is in plant genetics and molecular biology, and he has considerable research experience in plant biotechnology, genomics and crop improvement. During his early career, he made a breakthrough in developing a reliable system for producing transgenic larch plant, which represents the first record of genetically engineered conifer tree, carrying the important traits including resistance to insects and herbicide. Recently, using cutting-edge microarray, RNA-seq and next-generation sequencing technologies, his lab has generated the expression profiles and genomic data, leading to the identification of the critical genes and networks that regulate the host defense against insect pests, crop yield, and bioenergy quality in crop species. The overall goals of his research are to conduct basic studies to enhance our understanding of biological processes in plants, to apply newly developing genomic tools to facilitate genetic improvement of crop plants, and finally to improve the production system for a better utilization of agricultural and natural resources.

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Fuad Fares, J Biotechnol Biomater 2017, 7:6 (Suppl)
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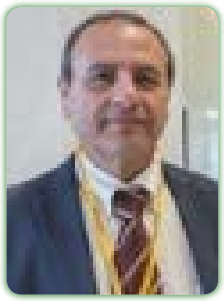

Fuad Fares

University of Haifa, Israel

Recombinant proteins from bench to clinics

Recombinant proteins from the use of DNA technology are found in essentially every western pharmacy, medical testing laboratory, and biological research laboratory. One major issue regarding the clinical use of many peptides is their short half-life due to the rapid clearance from the circulation. To overcome this problem, we succeeded to ligate the signal sequence of O-linked oligosaccharides to the coding sequence of the hormones. The cassette gene that has been used contains the sequence of the carboxyl-terminal peptide (CTP) of human chorionic gonadotropin β (hCGβ) subunit. The CTP contains 28 amino acids with four O-linked oligosaccharide recognition sites. It was postulated that O-linked oligosaccharides add flexibility, hydrophilicity and stability to the protein. On the other hand it was suggested that the four O-linked oligosaccharides play an important role in preventing plasma clearance and thus increasing the half-life of the protein in circulation. Using this strategy, we succeeded to ligate the CTP to the coding sequence of follitropin (FSH), thyrotropin (TSH), erythropoietin (EPO) growth hormone (GH) and thus to increase the longevity and bioactivity of these proteins *in-vivo*. Interestingly, the new analogs of FSH and GH were found not immunogenic in human and it is already passed successfully clinical trials phase III and phase II respectively. Moreover, FSH long acting was approved by the European Commission (EC) for treatment of fertility. In addition, our results indicated that long acting GH is not toxic in monkeys and the results from clinical trials phase I and phase II seem to be promising. Designing long acting peptides will diminish the cost of these drugs and perhaps reduce the number of injections in the clinical protocols

Biography

Fuad Fares has completed his DSc studies at the Faculty of Medicine, Technion-Israel Institute of Technology, and Postdoctoral studies at the Department of Molecular Biology and Pharmacology, School of Medicine, Washington University, St. Louis Missouri. He is the Director of the Department of Molecular Genetics at Carmel Medical Center and Associated Professor at the Department of Human Biology, University of Haifa. He has published more than 75 papers in reputed journals and serving as a Member of the Israel Council for Higher Education. He is the inventor of designing long-acting recombinant proteins and the initiator of PROLOR Biotech company.

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Liliana Rubio, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Liliana Rubio

PMO Polymer Business Intelligence, Brazil

Micro knitting yarn bio-composites (metallic fibers, organic fibers and biodegradable resin) for the smart textile market

On the dynamic business scenario, be functional, smart and interactive are the most valuable assets to become a reference in our markets. The global smart textile market promotes the implementation of nanotech and bio-composite projects in this field. Please note the market by moving beyond traditional path of what means value and fulfilling business future. We can identify the strategic alliance between textile industry and several markets as polymer, cosmetic, health, architecture and fashion. For several years, while these S-textile program have been able to go beyond the original objectives and is seeking its way towards industrialization and mass production for enhancing the breakthrough of intelligence textile systems. Every innovative initiative is committed in improving the convergence between industries and the leading edge of the textile market; on this scenario, the priority is the deep understanding of megatrends and new segments. We discuss about the most important trends that will define the architecture future of smart textile world. The author will also discuss the following; Smart is the new green, innovation to zero, urbanization, connectivity and convergence. Smart is the new green; It is the evolution of green products to smart products and service. Smart is all about efficiency, convenience and savings. We can define better with the implementation of BIOMIMETIC and mathematical equation $\sum Et \times \sum Ee \times \sum Em=0$, where time + force + movement must be Zero. Innovation to zero: means Innovation to negative beyond zero. It is a mega vision. It will be huge progress innovation to zero embrace research development planning and execution. All linked to the common labyrinth of sustainability as slow fashion. The era of Bio Smart-Textile world is a new approach to address the design in the modern architecture. The integration of bio composites and bioclimatic sensors that will lead to the emergence of new, innovative and unique design. Connectivity and convergence: Time in function of functionality, the power to communicate, respond, interact and broadcast information anytime, anywhere. Unique project which combine nano, engineered surfaces and microsystems physical sensors to create a seamless and intelligent life for us. Every project conceives in terms of human factor with profound impact on our society. Smart textile is a blue ocean, a revolution on the innovative and promissory market

Biography

Liliana Rubio is a Chemical Engineer, Master in Project Management, MBA in Business Administration, MBA in Innovation Management, Specialist in polymer; over 18 years' experience working on new business, R&D and marketing. She is a Lecturer on innovation and sustainability at universities and the main trade fairs of polymer and Fashion Industry in Latin America, EUA and Asia. She is the author of several articles that have been published in technology and business magazines. She is the Founder of PMO Polymer Business Intelligence is a Project Management Office, located in Sao Paulo-Brazil, dedicated to project management consulting, mentoring, covering project planning, implementation and execution through a front-to-end creative quantification approach, founder of SmartTex Hub ecosystem for the value chain of textile industry and final applications. She is the winner of the Clariant Corporation Innovation extra award: The sustainable project for the Green Industry on renewable resources. She is the winner Honorable Mention in Think Beyond Plastics Innovation competition on the category most innovative emerging business: plastic smog emissions closed loopon (bio composites from waste micro plastic particles (beads and fibers). She is the Sponsor and Finalist in the competitions Acelera Brasil and SUSTEX Tunisia with the projects about smart and sustainable fashion S-Textil.

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