JOINT EVENT

22nd Global Congress on **Biotechnology**

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5th International Conference on

Enzymology and Protein Chemistry

February 28-March 02, 2019 | Berlin, Germany

Keynote Forum

Day 1

Klaus Ammann, J Biotechnol Biomater 2019, Volume 9
DOI: 10.4172/2155-952X-C2-114

Klaus Ammann

University of Bern, Switzerland

Regulatory hurdles of gene editing, how to overcome them

Gene editing is a new plant breeding method of precise elegance. It will be a unique chance to create new crops, adapted to climate change, be more productive and building new sustainable resistance against the steadily growing and adapting crop pests. It will also help to shift modern agriculture to a more ecological production, in short: it is the future of modern agriculture. Opposition against the new breeding methods is often based on fundamentalist arguments which are not really built on science. Anti-GM literature is often full of questionable statistics and fake arguments. This is a great pity, since stigmatization of the new gene editing is unfortunately built on the easy going psychology of fear of fake risks, often welcomed by a society in rich countries, where the population desperately longs for new risk fights in a clearly growing safety of personal life. It would be much better to develop a constructive attitude, which could manifest in organo-transgenic agricultural strategies, where the best sides of organic farming and modern breeding built on gene editing could be combined without the ideological and commercial hurdles.

Biography

Klaus Ammann, Emeritus Prof. Hon. from the Bern University, Switzerland. Prof. Emeritus Hon. Bern University Switzerland. Thesis: vegetation and glacier history, summa cum laude in 1972 Bern University. Research topics: Biodiversity, Vegetation Ecology, Lichens and Mosses, Biomonitoring of Air Pollution, Plant Biotechnology: Biosafety, Gene Flow and Ecology of Transgenic Crops. Guest lecturing in Delft, Netherlands, Istanbul, Turkey, research in Jamaica, at Duke University and Missouri Botanical Garden. Member of the steering committee of www.prri.net. Scientific activities: maintaining 650 endnote reference bibliographies on plant biotechnology and biodiversity, over 320 publications under Klaus Ammann in journals, blogs, newspapers, books on biosafety research and ca. 210 slide presentations, many literature references with full text links. Editor, Co-Editor in journals from Elsevier, Springer and Landes. Member of scientific committees in Switzerland and Europe on biodiversity and biosafety. Fellow of the Royal Society of Biology, external member of the European Academy.

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Shoichiro Ozaki, J Biotechnol Biomater 2019, Volume 9
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Shoichiro Ozaki

The Institute of Physical and Chemical Research, Japan

The effect of increase of NOx and CO_2 on grain and fish production, protection of global warming and climate

In order, to study the reason why global warming is happening. Studies were conducted on amounts of CO_2 emission, CO_2 concentration NOx emission, grain production, fish production, population and CO_2 fixed from 1900 to 2016. Since the industrial revolution, burning of fossil and production of CO_2 and NOx increased greatly. Increased CO_2 and NOx promoted the CO_2 assimilation. Production of grain and fish increased. About 360 billion tone CO_2 is produced by burning of fossil fuels. About 14.4 billion tone NOx is produced in 2015. Most of emitted CO_2 is fixed by CO_2 assimilation. But since developed country started NOx elimination and NP elimination at around 1975, half of produced NOx is eliminated. Therefore, emitted 360 billion tons CO_2 is not fixed completely. Concentration of CO_2 increased about 2 ppm. In 2016, 142 billion tons CO_2 is remaining to give global warming. 142 billion tons of CO_2 must be reduced. We must promote CO_2 assimilation by complete use of emitting NOx and NP in waste water. Fossil fuel is burning out soon. We should not spend precious fossil fuel for the elimination of NOx and NP. We must increase CO_2 assimilation as much as possible.

Biography

Shoichiro Ozaki has obtained his PhD in Nutrition and Food Science at Ehime University. He has extended his valuable service for many years and has been a recipient of many award and grants. Currently, he is working as an Emeritus Professor at Ehime University. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect his wide range of publications in various national and international journals. He is also the Editor-in-chief of *Journal of Nutrition and Food Science*.

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Nikolaus Stolterfoht, J Biotechnol Biomater 2019, Volume 9
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Nikolaus Stolterfoht

Helmholtz-Zentrum Berlin, Germany

Biological applications of charged particle guiding through insulating nanocapillaries

After the first observation that keV ions are guided through insulating nano capillaries, the research topic has received increased attention during the past decade. The significant property of the capillary guiding is a self-organizing process, which controls the charge deposition inside the capillaries. With increasing deposition of the ions, the charge patch increases until the electrostatic field is sufficient to deflect the ions. At equilibrium, the ions are guided at relatively large distances from the surface so that they maintain their incident charge state. Milestones of the field are summarized in accordance with a recent review over the studies of capillary guiding. Experiments are treated emphasizing the guiding of highly charged ions in the keV energy range. Recent work with insulating nano and micro capillaries is reviewed. Apart from the experimental studies, theoretical concepts of the capillary guiding are presented. Specific emphasis is given to single conical capillaries allowing for the production of an ion beam of micron dimensions that can be applied in investigations of biological matter. Experiments are pointed out wherein the microbeam is directed on individual cells scanning their nucleus, environment and surface. Changing the ion energy, the insertion depth of the ion beam is varied so that the cell can be analyzed in three dimensions.

Biography

Nikolaus Stolterfoht has completed his PhD at Free University Berlin, Germany in 1970 and became a Group Leader at the Hahn-Meitner Institut Berlin where he habilitated. In the late 80's he became full Professor at University of Caen, France. In 90's he returned to Berlin at Helmholtz-Zentrum until becoming emeritus. He has 296 publications in reputed journals and a book with Springer. In 2017 he received the Doctor honoris causa.

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Day 2

Oara Neumann, J Biotechnol Biomater 2019, Volume 9
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Oara Neumann

Rice University, USA

Plasmonic nanostructures for imaging and targeting drug delivery

Engineering a compact, near-infrared plasmonic nanostructure with integrated image enhancing agents for combined imaging and therapy is an important nano-medical challenge. To overcome this challenge we designed a nanostructure with NIR plasmonic signatures composed of a 50 nm Au core surrounded a SiO_2 inner-shell doped with contrast agents and an outer Au shell. The plasmon resonance of this nanostructure known as a nano-Matryoshka (NM), can be tuned to the desired wavelength by varying the thickness of the layers. The encapsulated contrast agents used in this study are Fe(III)-DOTA, Gd(III)-DOTA and fluorescent dyes. The Fe(III)-NM based contrast agents are found to have relaxivities two times greater than the widely used Gd(III)-DOTA, providing a practical alternative for T1 MRI contrast agent that eliminates Gd(III) patient exposure entirely. Additionally, the internalization of fluorescent dyes and MRI contrast imaging agents within the NM substantially reduces the toxicity while maintaining a free nanoparticles surface for further bio-functionalization.

Biography

Oara Neumann is the Peter M and Ruth L Nicholas Research Scientist at Rice University (a fully funded, endowed research scientist position at the university). She has completed her PhD and Postdoctoral study in Applied Physics at Rice University, MSc in Chemical Physics at Weizmann Institute of Science, Israel and another MSc in Analytical Chemistry from Bucharest University, Romania. She is the Pioneer of nanoparticle-based solar thermal applications. She holds several patents and has published more than 25 refereed articles and has an h-index of 16.

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Guido Krupp, J Biotechnol Biomater 2019, Volume 9
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Guido Krupp

AmpTec GmbH, Germany

Synthetic mRNAs in clinical trials: Manufacturing of high quality GMP grade synthetic mRNAs

Synthetic mRNAs from AmpTec have achieved a world-wide acceptance. AmpTec's mRNAs are available as GMP grade products and have been introduced in several clinical trials in Europe, Australia and USA. Availability of high quality synthetic mRNAs is crucial in enabling significant progress in this field. Worldwide, a very limited number of active manufacturers of high quality mRNAs, AmpTec continues to realize its obligation to support the entry of new players by providing customized, mRNA products at small and large scales, from mg to grams. Applications of synthetic mRNA include reprogramming of human cells; antigen expression for vaccination projects in oncogenesis, infectious disease and allergy prevention; protein-replacement therapies. In a recent overview, applications and corresponding synthetic mRNA quality requirements were presented by Quabius & Krupp in New Biotechnology 2015. Syn-mRNAs can be generated by in vitro transcription (IVT) from defined templates containing the synthetic gene of interest. Optimal mRNA activity depends on a long, unmasked poly(A) tail, but long hompolymeric sequence are not reliably propagated in E.coli. Our alternative procedure uses PCR products as IVT-templates resulting in very well defined and easily modified poly(A) tails. Possible problems: Challenging sequences can lead to poor results in generation of the PCR template (AmpTec workflow) or (ii) during in vitro transcription reactions (workflow of all current mRNA manufacturers). For both steps (i) and (ii), results and trouble shooting are presented. Quality requirements and QC methods for GMP-grade synthetic mRNAs in therapeutic applications are presented.

Biography

Guido Krupp is a CEO and President of AmpTec GmbH. He received his PhD Degree from Würzburg University and Max-Planck-Institute Martinsried in 1981. He was Postdoc at Yale University from 1983 to 1987. He was a Research Group Leader at Kiel University from 1987 to 2002 and Founder of artus GmbH, 1998 and AmpTec GmbH, 2005 and KSK Diagnostics GmbH, 2015. His research interests include nucleic acid technology with focus on RNA, plant pathogens (viroids), ribozymes and telomerase. He has more than 60 publications, Editor of "Ribozyme Biochemistry and Biotechnology" and Editorial Board of "*Biotechnology Annual Review*".

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Anna S Vikulina, J Biotechnol Biomater 2019, Volume 9
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Anna S Vikulina

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The layer-by-layer technology: Design of novel soft, hard and hybrid advanced biomaterials for drug delivery

Now-a-days sequential deposition of naturally derived and oppositely charged biopolymers known as the layer-by-layer (LBL) technology became one of the key modern strategies for generating functional biomaterial coatings for diverse applications such as tissue engeenering, implant coatings and drug delivery. This was largely driven by the power of the LBL approach for biomimetics of extracellular matrix with a high precision at the nanoscale. The LBL technique has been also combined with a variety of soft and hard species including nanoparticles, carbon nanotubes, lipid bilayers in order to endow these hybrid materials with unique properties. More recently the LBL technology has been developed towards the coating of peculiar templates ranging from soft biomaterials (emulsions, liposomes and biological cells) to hard cores of sofisticated geometris (graphene, nanoparticles, inorganic crystals and their assemblies). This talk will focus on the design and applications of hybrid biomaterials made up taking advantage of the LBL approach. Among the variety of unconventional assemblies and architectures, coupling of the LBL coating with lipid and polymeric structures (soft), gold nanoparticles (hard-on-soft) and vaterite calcium carbonate crystals (hard) will be considered. Passive and active (temperature triggered) molecular transport within the LBL assembled structures will be addressed. Perspectives of the use of these hybrid assemblies will be highlighted.

Biography

Anna S Vikulina has completed her PhD in the field of Biological Science in Lomonosov Moscow State University, Russia. Currently, she is Marie-Curie Fellow in Fraunhofer Institute for Cell Therapy and Immunology, Potsdam, Germany. Her research is focused on the development of drug delivery carriers for controlled drug delivery and testing as well as for deciphering the pathways of biological action and transport of drugs. She has been awarded by prestigeous Alexander Von Humboldt and Marie-Curie Fellowships, served as a member of Organizing Committees at international conferences and scientific olympiads. She is also a guest editor in Micromachines Journal.

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