Scientific Tracks & Abstracts
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Nanoparticle-based mucosal vaccine adjuvant vectors against pandemic influenza infection

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A vaccine against pandemic influenza infection is much warranted. However, the formulation and design of such a vaccine is much debated. We have developed a fusion protein that carries the M2e-peptide that gives strong antibody and CD4 T cell responses. The immune response to the fusion protein CTA1-3M2e-DD provides heterosubtypic protection and it stimulates long term memory. To expand on the possibility to develop a stable and effective mucosal vaccine we have combined the fusion protein with nanoparticles and have achieved a very potent formulation. This way we can improve targeting of nanoparticles to dendritic cells, which results in very low reactogenicity, low antigen dose requirement and effective immunomodulation. Furthermore, we have successfully incorporated recombinant HA in these nanoparticles, opening up for additional combinations with flu-relevant proteins to be incorporated in this immunoenhancing nanoparticle complex. Thus, we have designed a versatile candidate vaccine against pandemic flu, which is an adjuvanted vaccine formulation with the conserved M2e peptide and the CTA1-DD immunoenhancing element. The combined CTA1-3M2e-DD/HA/nanoparticle vaccine candidate is highly effective in mice and provides strong heterosubtypic protection.

Speaker Biography

Valentina Bernasconi is 27 years old Italian PhD student currently living in Goteborg, Sweden. She got a Bachelor and a Master degree in Medical Biotechnology at Vita-Salute San Raffaele University, Italy, where she worked on a thesis on poxviral vectors as universal influenza vaccines. After graduation she moved to The Netherlands to work as a research assistant on Ebola vaccine based on adenoviral vectors. she have then been awarded a Marie Curie Action fellowship to support my PhD studies and she moved to Sweden, where she is currently working on the development of a subcomponent universal mucosal vaccine against influenza virus infection based on nanoparticles formulation.

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Notes:

Anti-energy based unconventional prophylactic HIV/AIDS vaccine provide proof of concept in human

Uniyal Bandana
Shri Radheykrishna Oaj (AIDS) Vaccine Organization, India

The human immunodeficiency virus (HIV) pandemic is now in its fourth decade. With more than 35 million infected in over thirty years, the HIV pandemic has been a unique challenge to the scientific community. The development of effective anti-retroviral therapy has decreased morbidity and mortality of those infected with HIV, but a comprehensive approach that includes effective preventive strategies will be needed to curb this unique pandemic. Vaccine remains the best option, but the development of a safe and effective preventive HIV vaccine has defied decades of research. Over 30 products have been tested in more than 85 trials, but no safe and effective vaccine has been developed yet. Despite these setbacks, these decades of research have broadened the understanding of HIV immunopathogenesis and closer to the goal of a successful HIV vaccine. Understanding the unique obstacles in HIV vaccine development has been key in creating breakthroughs and tracing a path forward. The complexity of this challenge has required innovative approach to vaccine development. Prototype HIV-1 vaccine candidates aimed at eliciting humoral and cellular immune responses have so far failed to protect against HIV-1 infection or to reduce viral loads after infection in clinical efficacy studies. A new unconventional basic research study finds a proof of concept in human when 1:2 dilutions of HIV-1 infected (positive) serum with anti-energy substance which lost its infectivity when left for two weeks. This vaccine strategy is based on energy utilized by the HIV-1 virus for replication inside host rather than proteinious nature of virus. No chemical treatment is required for inactivation and killing of HIV-1 virus. Vaccine was administered intramuscularly to HIV negative individual. After 3.5 years of follow up study, vaccine subject does not show any symptoms of HIV-1 infection and humoral antibody response. Protection was occurred due to cellular immunity. Sexual transmission of virus does not occur in study subject while no prevention methods were used during sexual relationship. In vaccine subject general parameters of blood (Complete Blood Count) is normal in range. The nature of HIV infections argues strongly that an effective vaccine must block infection such that it never becomes established in vaccinated individuals (i.e., sterilizing protection). The basic research study provides proof of concept for prophylactic HIV-1 vaccine in human. The study vaccine is safe and effective.

Speaker Biography

Uniyal Bandana is working on my unconventional anti-energy based hypothesis. She is a young Researcher and her prime aim of life is to prepare preventive vaccine against HIV/AIDS and struggling for developing her aim in reality. To fulfill her dream, she developed an organization. She has got Young Scientist B Fellowship in 2008 by the Department of Science and Technology, New Delhi.

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Notes:

Development of a *Bovine papillomavirus* VLP vaccine in bacterial host

Diego Grando Módolo
Butantan Institute, Brazil

Bovine papillomatosis (BP) is an infectious disease, presenting multiple benign epithelial proliferative lesions. BP causes economic losses, since affected animals usually show delayed development, weight loss, reduction of milk flow and leather quality. There are not yet commercial vaccines against BPV available up to date. Here, we developed an integrated study about the L1 capsid protein of BPV-1, obtained from bacterial expression system, concerning its purification, biosafety, thermo-stability and immunogenicity. The recombinant protein was expressed in bacteria and purified by Affinity and Ion Exchange chromatography. Circular dichroic (CD) spectra analysis indicated the correct folding of the recombinant L1 protein, suggesting a predominantly β-sheet structure. The thermostability of the recombinant L1 was accessed through the CD signal. Provided data revealed a TM value of 55.7°C. The biosafety of the recombinant L1 protein was evaluated by the cytokinesis-blocked micronucleus test. This test detected a high frequency of micro nucleated cells in the positive control, which was not verified in both the negative control and in the cells treated with the L1 recombinant protein. Complementally, comet assay indicated similar results. A heterogenic complex of structures was observed with Transmission Electron Microscopy, with a consistent conformation of both incomplete and complete VLPs, with approximately 45 and 55 nm, respectively. Structural capsomeres were also found nearby the virus-like particles. For prophylactic test, we inoculated by intradermal injection young calves. After 30 days of the booster dose, antibody levels in control group did not increase. On the other hand, the group that received two vaccine doses showed a significant high production of specific antibodies against recombinant L1 of BPV-1. Our strategy can be useful to evaluate the efficacy and the safety of different recombinant vaccine candidates. Moreover, described recombinant VLPs has proved to be a viable approach for designing new vaccines against other PVs species, including the human papillomavirus.

Speaker Biography

Diego Grando Módolo has a PhD degree in Genetics and Molecular Biology, and many years of experience in production of recombinant antigens in plants and bacteria. He has his expertise in expression and characterization of recombinant vaccines, including the production of papillomavirus virus-like particles. He is working at Butantan Institute, in the Research and Development of innovative solutions in the area of animal or human health using his experience in biotechnology to produce biomolecules of pharmaceutical interest.

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Discovery of polymeric toll-like receptor-4 (TLR-4) agonists to design a pathogen mimicking vaccine delivery system (PMVDS)

Hemachand Tummala
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A new generation of vaccine adjuvants is aimed to specifically target pathogen recognition receptors of innate immunity, such as Toll-like receptors (TLRs) and Nod-like receptors (NLRs). Polysaccharides provide an exciting new platform to interact with the innate immune system due to their abundance in pathogens, and their relative non-toxic properties. By integrating the knowledge from recent advancements in immune-signaling, material science, and drug delivery, our laboratory had discovered a novel polysaccharide polymer-based TLR-4 agonists; Inulin, inulin acetate (InAc) and inulin benzoate (InBz). Hydrophobic polymers InAc and InBz were synthesized from water-soluble inulin using acetylation and benzoylation, respectively. The TLR-4 agonistic activity of these polymers was established in multiple immune cells (microglials, dendritic cells, and PBMCs) by various genetic and pharmacological approaches. By using these immune-active polymers as biomaterials, we have rationally engineered "Pathogen Mimicking Vaccine Delivery System" (PMVDS) that could potentially encapsulate multiple antigens. The uniqueness of PMVDS is that it is both an efficient vaccine delivery system similar to nanoparticles and a vaccine adjuvant. The polymers and PMVDS particles were thoroughly characterized by a myriad of physicochemical techniques. The effect of the size of the particles, dose of an antigen and adjuvant on immune-activation was studied in mice. The adjuvanticity of PMVDS was established in multiple animal species (mice, pigs, sheep, and dogs), multiple routes of administration (intradermal, subcutaneous, and nasal) and with multiple antigens (peptides and proteins). The safety of PMVDS was assessed using cytotoxicity, skin histochemistry and in-vivo imaging techniques. The robustness of PMVDS in preventing/treating the diseases was investigated on influenza and melanoma mouse models. In conclusion, using an interdisciplinary approach we have engineered PMVDS as a unique platform vaccine delivery and adjuvant technology, which will have broader applications in designing the next generation vaccines against challenging disease where both humoral and cell-mediated immunity is desired.

Speaker Biography

Hemachand Tummala had extensive training and expertise on formulation development (Pharmaceutics), immunology and biochemistry. This unique combination has enabled him to focus on interdisciplinary research to address challenges related to human and animal health. A large emphasis of his research program is focused on discovering functional biomaterials that interact with the biological system to overcome therapeutic challenges in various diseases including cancer, inflammatory diseases, and infectious diseases (vaccines). This approach had led to the discovery of novel polymer based TLR agonists and antagonists with applications in vaccines and inflammatory diseases, skin penetration peptides for transdermal delivery and functional nanoformulations to improve the pharmacokinetics of nanomedicine in cancer treatment. His discoveries led to six patent applications and are at various stages of commercialization both in animal and human health sectors. He also serves as a research consultant for several small biotech and pharma industries.

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Tumor liberated protein (TLP) as potential vaccine for lung cancer patients

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Foundation de Beaumont Bonelli for cancer research, Italy

Tumor liberated protein (TLP) has been previously described as a TAA (complex) present in the sera from lung cancer patients with early stage disease. Since early detection improves overall survival in lung cancer, identification of screening biomarkers for patients at risk for the development of this disease represents an important target. Starting from the peptide epitope RTNKEASI previously isolated from TLP complexes, we generated a rabbit anti-RTNKEASI serum. This antiserum detected and immunoprecipitated a 55kDa protein band in the lysate of the lung cancer cell line A549. This protein band was identified as aldehyde dehydrogenase isoform 1A1 through mass spectrometry, revealing the molecular nature of at least one component of the previously described TLP complex. Next, we screened a cohort of 29 lung cancer patients (all histologies), 17 patients with non-neoplastic lung pathologies and 9 healthy donors for the presence of serum ALDH1A1 and global serum ALDH by enzyme-linked immunosorbent assay. This analysis indicated that the presence of ALDH was highly restricted to patients with lung cancer. Interestingly, the global ALDH test detected more lung cancer patients compared to the ALDH1A1-specific test, suggesting that other ALDH isoforms might add to the sensitivity of the assay. Our data suggest that ALDH levels may therefore be evaluated as part of a marker panel for lung cancer screening. Finally, the ability of the immune system to recognize a TAA, enables the development of a vaccine approach for preventive and therapeutic application and represents a main target of this field of research.

Speaker Biography

Giulio Tarro has graduated from Medicine School, Naples University (1962). He was Research Associate at Division of Virology and Cancer Research, Children's Hospital (1965-1968), Assistant Professor of Research Pediatrics, College Medicine (1968-1969), Cincinnati University, Ohio, Oncological Virology Professor, Naples University (1972-1985). He acted as Chief Division Virology (1973-2003), Head Department Diagnostic Laboratories, (2003-2006), D. Cotugno Hospital for Infectious Diseases, Naples; Emeritus, 2006. Since 2007, he is the Chairman Committee of Biotechnologies and VirusSphere, World Academy Biomedical Technologies, UNESCO, Adjunct Professor Department Biology, Temple University, College of Science and Technology, Philadelphia, Recipient of the Sbarro Health Research Organization lifetime achievement award (2010). His researches have been concerned with the characterization of specific virus-induced tumour antigens, which were the fingerprints left behind in human cancer. His achievements include patents in field; discovery of Respiratory Syncytial Virus in infant deaths in Naples and of tumor liberated protein as a tumor associated antigen, 55 kilodalton protein overexpressed in lung tumors and other epithelial adenocarcinomas.

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Comparability of biosimilar products: Insulin as a model

Maely Pecanha Favero-Retto
National Institute of Cancer, Brazil

Introduction: Government initiatives at several nations have motivated the development of biosimilar products. In contrast to generics, biosimilar regulations require comparative preclinical and clinical data because of uncertainties regarding the level of characterization achievable, and the possible clinical consequences of differences in physical–chemical characteristics, such as amount of impurities. Protein therapeutics are a class of products which have a complex three-dimensional structure in solution whose integrity determines the biological activity, clinical efficacy, and safety. Thus, it is highly desirable that products from this class meet well-defined requirements for structural integrity. The characterization of conformational and oligomeric distribution of proteins is of paramount importance.

Methodology: We have studied regular acting, wild-type human insulin, and insulin analogues from different pharmaceutical products directly from their final finished formulation by the combined use of mass spectrometry, dynamic light scattering, small-angle X-ray scattering, nuclear magnetic resonance, single-crystal protein crystallography and electrospray ionization-mass spectrometry coupled to ion mobility spectrometry with the aim to analyze structural information.

Findings: We have made the combined use of modern state-of-the-art structural techniques for the detailed characterization of the chemical and structural integrity, accessing the correct folding through the evaluation of the secondary, tertiary and quaternary structural arrangement of the human insulin and insulin analogues.

Conclusion & Significance: These structural methods are currently well-established, and they can be accessed in most countries, in special those for the main pharmaceutical markets, the Americas, Europe and Japan. It could be used in routine evaluation of structural integrity and identity, as a part of current or evolving methods aiming the minimization of animals' requirement in routine quality control, in the development of novel insulin products, or in future protocols for a thorough comparability exercises between follow-on protein product and a reference product.

Speaker Biography

Maely Pecanha Favero-Retto is graduated in Pharmacy from the Federal University of Rio de Janeiro (1995), Master in Biological Chemistry from UFRJ (1999) and PhD in Pharmaceutical Sciences from UFRJ (2013). She is specialist in Hospital Pharmacy (2007) and Clinical Pharmacy (2015) by SBRAFH, with Executive MBA by the COPPEAD Institute (2008). She is currently a Technologist in Hospital Pharmacy at the National Cancer Institute and at the Hospital Municipal Miguel Couto. She is Professor of the Multiprofessional Residency in Oncology at INCA and postgraduate courses and President of the Brazilian Society of Hospital Pharmacy and Health Services (SBRAFH). She has experience in the field of biological metrology with emphasis on the study of biosimilar products.

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Stability modeling to predict vaccine shelf-life and evaluate impact of temperature excursions from the "cold chain"

Didier Clenet
Sanofi Pasteur, France

The stability of vaccines is of great interest industries and government institutions. Accelerated stability studies are designed to determine the rate of vaccine degradation over time as a result of exposure to temperatures higher than those recommended for product storage. However, commonly applied stability predictions based on application of zero- or first-order kinetics are very often too simplified for description of the degradation of biological products, which frequently undergo complex and multistep degradation reactions. We used an advanced kinetic approach mixing with statistical analysis to fit the forced degradation ELISA data by computed kinetic parameters, and finally, to predict valuable the long-term stability of vaccine containing several variants in a freeze-dried form. The modeling approach is based on the selection of the most appropriate kinetic equations which fit the degradation rate of compounds subjected to elevated temperatures, accelerating the rate of the reaction. According to 6 months data obtained at elevated storage temperatures, "two-step" models were identified to conveniently describe antigenicity of variants. We have predicted 2 years antigenicity, in agreement with real long-term stability data. The stability modeling procedure was also successfully applied for the prediction of antigenicity during several temperature excursions, thereby demonstrating the accuracy of the kinetic models. To the best of our knowledge, this is the first procedure mixing a global kinetic approach and modern statistical analyses to accurately determine a vaccine degradation rate able to predict shelf-life of bio-products stored in refrigerated condition and suffered temperature excursions from the cold chain.

Speaker Biography

Didier Clenet has joined R&D Formulation and Stability platform of Sanofi-Pasteur in 2011. He focuses his work on high throughput screening formulations, stability prediction using advanced kinetics, vaccine activity structure relationship, particulate matter in vaccines and adjuvants process optimization and physio-chemical characterization. For more than 15 years in Sanofi R&D, he was dedicated on physical and biophysical characterization of active ingredients, freeze-dried products and monoclonal antibodies (mAbs, ADC). He developed novel X-ray diffraction and thermal analysis tools to study polymorphism and amorphous state in solid materials. His research interests are structural characterization and aggregation state determination using a variety of biophysical techniques (light scattering, flow-imaging, DSC and thermokinetics, fluorescence and infra-red spectroscopy). He implemented Biophysical lab and a lab-automation platform for bioproduct formulations. He is coaching to young scientists and performed courses in several Universities.

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A rapid platform immunogenicity testing of cancer (neo) epitopes amenable to predict responders from non-responders

Pirouz Daftarian and **Marc Delcommenne**
MBL International Corporation, USA

Only a fraction of cancer patients benefits from immune checkpoint blockades (ICB). Those who respond to ICB have some intrinsic anti-tumor immune responses. The effectiveness of such therapies depends on the intrinsic antitumor immunity namely preexisting tumor-specific cytotoxic T cells. A notion that has intensified research studies on cancer vaccines to assist ICB, with an aim to treat those cancer patients that currently do not respond to ICB therapies. In the recent years, the research tools and technologies for the identification of cancer mutations and of potential neoepitopes have improved dramatically, to the point that they have never been this promising. However, such candidate neoepitopes must be validated functionally for their immunogenicity, only those that are expressed and can be processed and presented are real neoepitopes. A solid characterization or indication of true neoepitopes is that they can bind to the MHC groove. Indeed, it is difficult to make a verdict on the immunogenicity of (neo) epitopes without a rapid method to measure the binding of these peptides to MHC of the hosts. We have devised a rapid, user-friendly peptide exchange tetramer assay (that can help determine the binding of novel peptides to MHC class I molecules and to generate new specificity MHC class I tetramers for peptide specific T cell detection. Here, we show data on the validation of the platform and present data on how this platform may be used to discriminate responders from non-responders. For the validation of the platform, peptides were assessed for their HLA-A2402 binding and data from three different laboratories. Studies are ongoing to determine how this assay may discriminate between responders and non-responders to peptide based vaccine therapy, which will be discussed.

Speaker Biography

Pirouz Daftarian is the Applications Manager, at MBL International focusing on applications in immuno-oncology. He is also a Volunteer Assistant Professor University of Miami, USA. He is a Vaccinologist/Immuno-Oncologist with 20 years of experience in T-cell biology, vaccine development. IVD assay development for I-O biomarker and surrogates of tumor rejection. He has nine patents and more than 50 publications in peer reviewed journals.

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Notes:

Impact of vaccination on the socioeconomic risk factors for cholera in an endemic setting of Bangladesh

Amit Saha[1,2], Andrew Hayen[1,3], Mohammad Ali[4], Alexander Rosewell[1], C Raina MacIntyre[1] and **Firdausi Qadri[2]**

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Background: Cholera continues to be a threat in many developing countries. Socioeconomic factors play an important role in transmitting the disease. Killed whole-cell oral cholera vaccines (OCV) are now considered an important tool to control cholera. This study aims to investigate the impact of vaccination on the socioeconomic risk factors of the disease.

Methods: The study was conducted in Dhaka, Bangladesh. The study area was divided into 90 geographic clusters; 30 in each of the three arms of the study: vaccine (VAC), vaccine plus behavioural change (VBC) and a non-intervention arm. Socio-demographic data of each individual were linked to vaccination and cholera surveillance using a unique ID given to each individual in the study population. The data were analysed for the three populations: 1) recipients of two-doses of OCV in the intervention arm (VAC and VBC arms) 2) OCV non-recipients within the intervention arm and 3) all participants in the non-intervention arm. A generalized estimating equation with logit link function was used to estimate the risk for cholera among these different populations adjusting for household level correlation in the data.

Results: Vaccine was associated with significant protection of cholera. A total of 528 cholera and 226 cholera with severe dehydration (CSD) cases in 268,896 participants were observed in the two-year follow-up. For population 1, no socioeconomic factors were found to be risk for cholera; however, CSD was less likely among participants living in a household having ≤4 members (aOR=0.55, 95% CI=0.32-0.96). Among population 2, younger people and individuals having diarrhoea during baseline census were more likely to have cholera than their counterpart. In this population, females and individuals with diarrhoea at baseline census were at increased risk of CSD. Among population 3, participants living in a household without a concrete floor, or in an area with high population density, or closer to the icddrb hospital, or not treating drinking water were at significantly higher risk for cholera and CSD.

Conclusion: A cholera vaccination eliminates the risk for cholera due to socioeconomic disparities among population in an economically disadvantage setting.

Speaker Biography

Dr Amit Saha is an epidemiologist with special interest in the epidemiology of vaccine-preventable diseases and promoting the implementation of vaccines in resource-poor settings. He is a medical graduate and holds Master of Medicine (M.Med.) in Infection and immunity from the University of Sydney. Amit is an Associate Scientist in the group of Infectious Disease Division at icddr,b in Bangladesh and currently a doctoral candidate with the School of Public Health and Community Medicine, UNSW. He has over fifteen years of professional experience in a wide range of fields in infectious diseases epidemiology and large field-based clinical studies on enteric vaccines in low and middle income countries.

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Notes:

Production, conservation, distribution, import and export of vaccines, B2B

Abiude Paulino
Eduiba global-projectos & consultoria, Angola

Angola is the country with the highest child mortality rate in the world, says WHO-World Health Organization, which released the annual report on health monitoring in the world. Angola, a Portuguese-speaking African country, has the highest infant mortality rate in the world and the second lowest in life expectancy from 2015 to 2017. In the country, every thousand live births, 156.9 children die by the age of five and the yellow fever that killed thousands of people in Angola in 2016.

Maternal Mortality Rate: Regarding maternal mortality, Angola recorded 477 deaths per 100,000 live births. The second country with the highest maternal mortality rate is Sierra Leone, where 1,360 women die in the year.

Production Expectation: Supporting Africa to advance universal health based on stronger primary care by supplying vaccines in Angolan hospitals is the best thing we can do to make sure we can achieve a better position in the fight against the eradication of poliomyelitis diseases with opportunities to create consistent laboratories, clinics and hospitals with technical and labor skills.

Interfering Factors: Factors that interfere with vaccination coverage in Angola can be grouped in several dimensions: the lack of a permanent immunization system (policy). The lack of vaccine distribution and conservation structures, the lack of design laboratories and specialized clinics, the lack of mass publicity and initiatives in the vaccine areas and lack of sufficient import of all types of vaccines.

Speaker Biography

Mr. Abiude Paulino is proficient in Project Management Technology. Founder of Eduiba Global, technology markets analyst. Has your experience in research, evaluation and passion in improving health and well-being. In an analysis based on health problems in Angola, it intends to develop projects related to the production of equipment and vaccines in Angola. Its evaluation model will create new ways to improve health care in Africa.

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Notes:

Fundamental routine immunization and prevention program

Many Luvalo
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The outbreak of yellow fever in Angola, as well as in Rdcongo, was a strong signal of the absence of a large network of humanization (political) for lack of creation and support in the work related to primary health care. According to the United Nations agency for health, more than 965 people were killed by the epidemic, 868 cases of infection were laboratory confirmed only in Angola, and more than 30 million people were vaccinated in emergency campaigns to control the outbreak in both countries neighbors, who have the weakest health systems in the world. With nearly 25 million inhabitants, Angola has three million clinical cases annually and 6,000 annual deaths, according to Filomeno Fortes, coordinator of the National Malaria Control Program. Bet on prevention the question is what should be done to avoid a new epidemic, namely: The creation of child vaccination programs continues the creation of structures for the conservation of vaccines, flexible vaccine distribution management and routes transportation (import and export policies) decentralization of health services and prevention rapid response teams for outbreak response. WHO recommends that all countries at risk have at least one national laboratory where basic blood tests for yellow fever and other outbreaks of epidemics can be carried out. A case of yellow fever laboratory confirmed in an unvaccinated population is considered an outbreak. A confirmed case in any context should be thoroughly investigated, particularly in an area where the majority of the population has been vaccinated. Research teams should assess and respond to the outbreak with emergency measures and longer-term vaccination plans.

Speaker Biography

Many Luvalo is Project Manager and Supervisor of Eduiba Global-Projectos and Consultoria, Proficient in commercial marketing management and customer acquisition. Graphic-web designer skills and social network management, promoter of health and IT technologies. Has experience in analyzing new markets and as an activist in AHPS-ONG has passion and experience in social and philanthropic work, promoting Art, well-being, peace and helping other

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Presence of cellular components in vaccines

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Now preventive maintenance of a flu by means of vaccination is conventional and is supported by experts from all over world. Aim of the present study is to check presence of trypsin-like proteinase and its inhibitor in antiflu and other vaccines and in immunobiological blood preparations of domestic and foreign manufacture. In work following commercial preparations have been used:" Interferon leukocytic human"," the Immunoglobulin of human placental, donor 10 %, a gonococcal vaccine a herpetic vaccine (Odessa), vaccines for preventive maintenance of a flu, a season 2002/2003 -"Influvac" which consists of hemagglutinins and a neuraminidase of a virus of a flu, strains: A/Moscow/10/99 (H3N2), A/New Caledonia/20/99 (H/N), B/Hong Kong/330/2001, "Fluarix" which consists of hemagglutinins of strains (H1N1) A/New Caledonia (H3N2), A/Panama and B/Shandont 17/97 and "Vaxigrip" which consists of three strains of a flu virus, a vaccine for preventive maintenance of a hepatitis A - "Avaxim", a blood preparation received from a heparin (the antifactor of Ha) - "Fraxiparine", a preparation from a blood of calfs for a hemodialysis - "Solcoseryl". Preparations were investigated before the termination of a period of validity. Work is devoted to study presence of components of a cell-owner and its inhibitor in vaccines and blood preparations and to define presence trypsin-like proteinase and its inhibitor in vaccines and blood preparations. It is revealed that anti influenza vaccines (influvac, vaxigrip, fluarix), herpetic and tularemic vaccines contained an inhibitor of trypsin-like proteinase in considerable quantity. Commercial preparations from a human donor blood (an immunoglobulin, interferon, fraxiparine and solcoseryl) contained as trypsin-like proteinase, and its inhibitor. The immunoglobulin contained in 4, 0 times more inhibitor, than interferon. Hence, the modern vaccines applied to prophilaxis and treatment, are insufficiently cleared. Presence of cellular components (enzymes and inhibitors) could lead to allergization and follow complication which is not very known.

Speaker Biography

Valentina A Divocha is graduated from I I Mechnikov Odessa State University, Faculty of Biology (Department of Virology) in 1967. In 1973, she continued her Postgraduate study at Odessa Institute of Virology and Epidemiology (specialty virology). In 1974, she was awarded with her candidate degree thesis entitled interaction of coxsackie B viruses with sensitive cell cultures and their antigenic relationships. In 2009, she was awarded her Doctoral degree with the thesis entitled biological basis antiproteinase therapy of influenza. Under her leadership she has guided a doctoral and two master's theses. Her scientific experience is of 35 years. She has more than 190 scientific publications, three monographs, textbook *Virology* (2012), 10 patents, three innovations. She is currently working as the Head of the Laboratory of Experimental and Clinical Pathology for Ukrainian Research Institute of Transport Medicine, is the Supervisor of the nine research programs in virology and biochemistry.

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B. subtilis spores as mucosal adjuvants

Veronica Donato
National University of Rosario, Argentina

B. subtilis spores have received growing attention because of their potential in biotechnology, including vaccine development. There are only a few studies using these probiotic bacteria as a vaccine delivery system or as an adjuvant itself. For this reason, with my lab team, I decided to study *B. subtilis* spores as a potential candidate to solve some of the problems of current vaccines such as the need of refrigeration systems, needles and syringes and booster dose. I will present some of our data and a review of what is known about this probiotic bacteria that can help us improving the inmunization world.

Speaker Biography

She is a Postdoctoral fellow National University of Rosario. School of Biochemistry. CONICET. Molecular Microbiology Lab. Mentor: Roberto Grau, PhD C. elegans and Bacillus subtilis. Studies on host-bacteria interactions: aging, gut, inmune and nervous system. Neurobiology. PDTS38 CONICET Projects. My postdoctoral research focused on studing the microbiota effects in C. elegans gut, inmune and nervous systems. Moreover, my project studied the effects of biofilm proficiency, nitric oxide and bacterial quorum sensing molecules in C. elegans aging process

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Barriers to full immunization among children in a muslim-majority town in the Southern nations, nationalities, and peoples' region, Ethiopia

Yemesrach A Tefera[1], Abram L Wagner[2], Eyoel B Mekonen[1], Bradley F Carlson[2] and **Matthew L Boulton[2]**
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Vaccination is one of the most cost effective health interventions worldwide, but vaccine preventable diseases still contribute substantially to under age five morbidity in Ethiopia. The objective of this study was to assess complete immunization coverage and its associated factors among children aged 12–23 months in Worabie town, Southern Nations, Nationalities, and People's Region. A cross-sectional study was conducted in July and August 2016, using a systematic selection procedure of households. Health Extension workers assessed the vaccination status of the children based on vaccination cards or mother's verbal reports. Full vaccination was defined as one dose Bacillus Calmette-Guérin, three doses pentavalent vaccine, three doses oral polio vaccine, three doses pneumococcal conjugate vaccine, two doses rotavirus vaccine, and one dose measles vaccine. Multivariable logistic regression analyses were used to assess which sociodemographic or knowledge-type factors were associated with immunization coverage. Among 484 children, 61% were fully vaccinated, 61% had ≥3 antenatal care (ANC) visits, and 74% were aware that vaccines prevented disease. Factors associated with full vaccination include the number of ANC visits (odds ratio (OR) of ≥3 vs. 0 visits: 7.2, 95% CI: 1.9-27.1), mother working outside of home (OR: 2.5, 95% CI: 1.3-3.5), and mother who hesitated to vaccinate their child (OR, 0.57, 95% CI: 0.3-0.9). Full vaccination coverage among children aged 12–23 months remains low. The number of ANC visits and work outside of the home were important predictors of full vaccination. Local interventions should raise awareness in the community of the importance of immunizations and antenatal care visits.

Speaker Biography

Yemesrach Abeje Tefera has completed her master's in public health from Addis Ababa University in Ethiopia. She was a Visiting Scholar in University of Michigan School of Public Health from September to December 2016. She is a Lecturer in Public Health Department and Director of Continues Professional Development (CPD) Center at St Paul's Hospital Millennium Medical College (SPHMMC) in Ethiopia. She has published two papers and submitted more than five papers.

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