magnus Group

2nd Edition of

INTERNATIONAL VACCINES CONGRESS

19-20 OCT 2022

VIRTUAL EVENT

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BOOK OF ABSTRACTS

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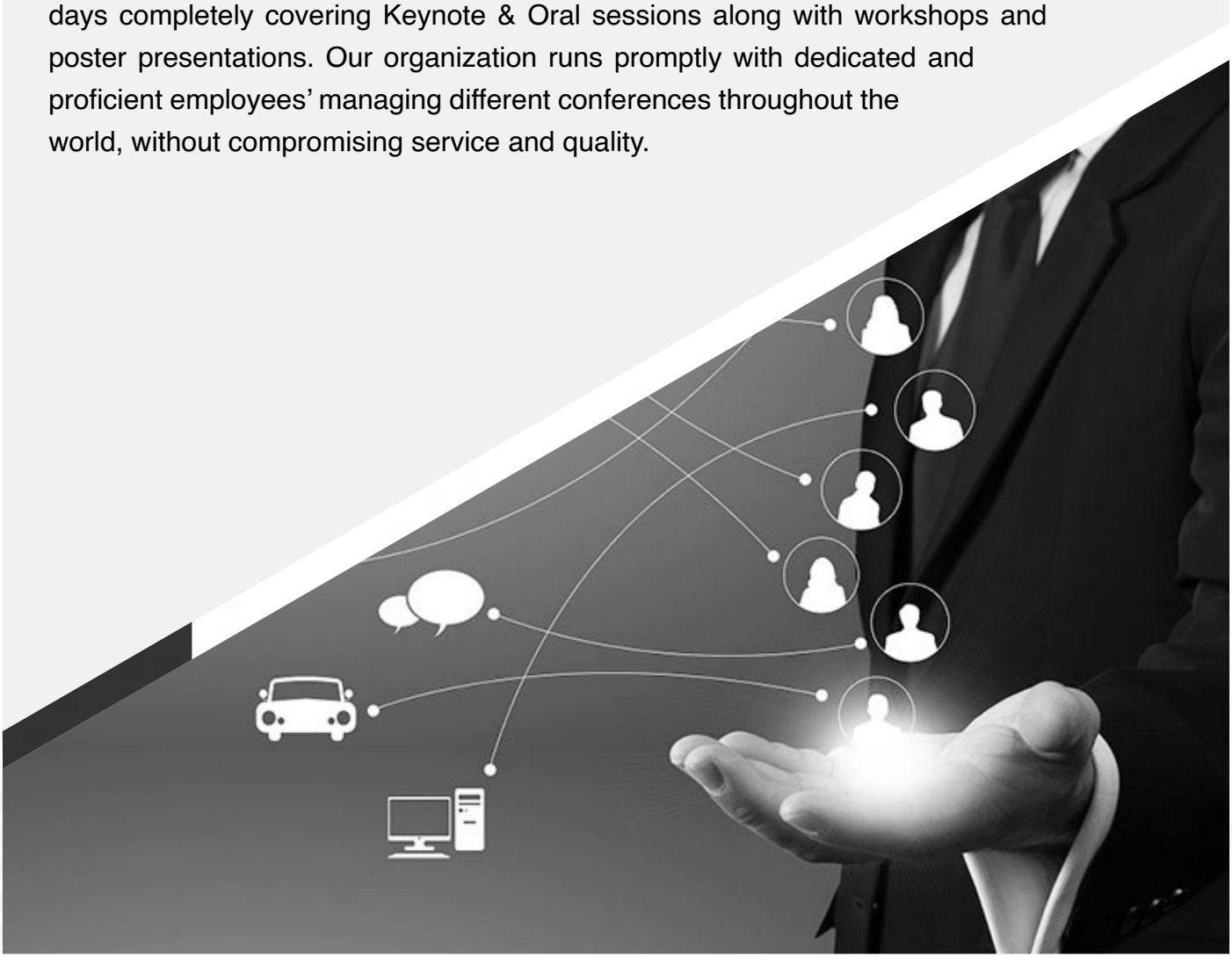
ABOUT MAGNUS GROUP

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academIVCns and researchers of same field or interdisciplinary research. Magnus Group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conference and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.



ABOUT IVC 2022

Magnus Group takes honor and great opportunity to invite you to the "**2nd Edition of International Vaccines Congress**" (IVC 2022) scheduled during **October 19-20, 2022** (Virtual Event). IVC 2022 strives to provide a meaningful theme of "*Synergy to Rehabilitate Innovations in Vaccine Research and Development*" and offers a great international multidisciplinary platform bringing together the professionals, researchers and world class scientists from Vaccine researchers and potential investigators. We encourage you to take part in this conference as there will be Keynote address to Oral and Poster presentations with the discussions focused on diversified scientific sessions ranging from basic cell science to advanced innovations in the field of Vaccinations with novel and sophisticated applications for the betterment of healthcare.

KEYNOTE FORUM

DAY 01

2ND EDITION OF

INTERNATIONAL VACCINES CONGRESS

19-20 OCT

Ranjan Ramasamy

IDFISH Technology, Milpitas, CA, USA

Genetic factors influencing early immunity to SARS-Cov-2 in the upper respiratory tract

The nasal epithelium is the initial site of SARS-CoV-2 infection. Early and effective immune responses in the Upper Respiratory Tract (URT) can limit and eliminate the infection in the URT, thereby preventing infection of the lower respiratory tract and the development of severe COVID-19. SARS-CoV-2 interferes with innate immunity signalling and evolves mutants that can reduce antibody-mediated immunity in the URT. Recent genetic and immunological advances in understanding innate immunity to SARS-CoV-2 in the URT, and the ability of prior infections as well as currently available injectable and potential intranasal COVID-19 vaccines to generate anamnestic adaptive immunity in the URT, are reviewed. It is suggested that the more detailed investigation of URT immune responses to all types of COVID-19 vaccines, and the development of safe and effective COVID-19 vaccines for intranasal administration, are important needs.

Audience Take Away:

- Cutting edge appreciation of protective immunity to SARS-CoV-2.
- Assist teaching.
- Help design additional research to advance knowledge of immunity to SARS-CoV-2.
- Advance appreciation of the need to develop more effective vaccines.
- Help design better vaccines for COVID-19.

Biography:

Ranjan Ramasamy graduated from the University of Cambridge, UK and then obtained a PhD also from the University of Cambridge. He has since held academic appointments in the UK and abroad including Australia, Sri Lanka and the USA. He was the Chairman of the National Science Foundation of Sri Lanka, Professor of Life Sciences at the Institute of Fundamental Studies in Kandy in Sri Lanka, Professor of Biochemistry in the University of Jaffna in Jaffna Sri Lanka, Professor of Immunology in the University Brunei Darussalam Medical School and held institute appointments at the Babraham Institute in Cambridge in the UK & Scripps Clinic and Research Foundation in La Jolla in the USA. He has more 250 publications in fields pertaining to Medical Sciences. He was on the Committee on Scientific Planning and Review of the International Council for Science, and the Board of Governors of the International Centre for Genetic Engineering and Biotechnology.

WenQing Yang*[1], Yuxi Yan[1], Quan Zhao[1], Ya Huang[1], Janine Y. Yang[2], Jie Zou[1], Chunxia Ao[1], Xiaojuan Chai[1], Renhong Tang[1]

[1]State Key Laboratory of Translational Medicine and Innovative Drug Development, Jiangsu Simcere Pharmaceutical Co., Ltd., Nanjing, Jiangsu, China

[2]Massachusetts Eye and Ear, Harvard Medical School, USA

Considerations on MS animal modeling: Format of myelin immunogens used for experimental autoimmune encephalomyelitis model establishment may affect pharmacologic responses of anti-inflammatory drugs

Multiple Sclerosis (MS) is one of the most common causes of neurological dysfunction representing unmet medical need, which demands novel therapies toward a cure. Experimental autoimmune encephalomyelitis (EAE) is the most commonly used model for studying autoimmune-mediated myelin degradation in MS. The immunological and neurobiological mechanisms underlying the pathogenesis, progression, and prognosis of MS are complicated. Myelin Oligodendrocyte Glycoproteins (MOG) 35-55 and MOG1-128 are commonly used peptides for EAE model induction and the selection of MOG is often investigator's preferences. In this presentation, the pharmacologic responses of anti-inflammatory drugs with different mechanisms of actions (MOAs) were evaluated using EAE models induced by either myelin oligodendrocyte glycoprotein MOG35-55 or MOG1-128. The animals with EAE were treated with different Anti-MS medications, including three (3) B cell-mediated agents and two (2) T cell-mediated agents, respectively. Clinical symptoms were monitored and scored, and pharmacodynamic markers including cytokine secretion, inflammatory cell infiltration, and demyelination in spinal cord were analyzed. Our results demonstrated that induction of EAE by different myelin antigens resulted in differential pharmacologic responses to drugs with specific MOAs. The MOG35-55-induced EAE model only responded to T cell-modulating drugs, whereas the MOG1-128-induced EAE model exhibited therapeutic sensitivity against both T cell- and B cell-modulating agents. These data suggest the MOG35-55 peptide-induced EAE model is suitable for assessing T cell-modulating agents while MOG1-128-induced model can be employed to evaluate both T cell- and B cell-modulating agents. Due to complex pathogenesis of the disease and interplays between immunological and neurological responses, systematically comparative studies on pharmacological responses of different EAE animal models may shed lights on better understanding of disease biology and provide animal model preference in MS research.

Audience Take Away:

- This presentation provides a guidance for researchers on MS preclinical models selection and applications to facilitate MS translational research and drug development process.
- Yes, provide better understanding on MS animal modeling and wisely choosing appropriate models.
- Yes, this research that other faculty could use to expand their research or teaching.
- Yes, this provides a practical solution to a problem that could simplify or make a designer's job more efficient.

Biography:

Dr. Yang finished his Ph.D. on Cell Biology and completed an extensive Post-Doctoral training at University of Calgary/Tom Baker Cancer Centre, Canada. He has ~30 years of translational and innovative drug development experience on cancer and inflammation from a range of leading pharmaceutical organizations, including Celgene, Amgen, Crown Biosciences, Kosan Biosciences and ImaginAb Inc. He has led or crucially contributed to drug discovery programs involving >20 novel targets in the areas of gene therapy, epigenetics, targeted therapy and I/O, which led to 15 INDs or Phase-III development. Dr. Yang's expertise focuses on translational medicine and translational research in cancer and inflammation and he has published ~100 research papers or reports. Dr. Yang currently serves as an Executive Director on translational sciences, State Key Laboratory of Translational Medicine and Innovative Drug Development, Simcere Pharma Group. He held several management positions in the biotech industry including Executive Director, Cancer Biology, Global Scientific Research Innovation Organization of Crown Biosciences, and Senior Director of Cancer Pharmacology, Crown Biosciences, and Head of Pharmacology at ImaginAb Inc.

Zhao-Hua Zhou*, Sydney Cohen

Office of Biotechnology Products, Office of Pharmaceutical Quality, CDER/FDA

Mast cell degranulation links anti-peg IGE to anaphylaxis caused by PEGylated drugs and PEG-contained LNP/mRNA COVID vaccines

Polyethylene Glycol (PEG) - modification (PEGylation) is a highly successful strategy for improving the therapeutic properties of protein products. PEGylation increases protein size, inhibits proteolysis and decreases renal filtration, thereby improving the pharmacokinetics (half-life) of the protein drugs. PEG is also a critical component to stabilize Lipid Nano Particle (LNP)-based therapeutics. Despite the success in achieving improved pharmacokinetics, PEGylated drugs have a small but significant rate (from less than 0.1% up to 9%) of acute allergic reactions, many upon first treatment with the PEGylated drug. LNP/mRNA based COVID vaccines have also reported higher rates of allergic reactions than general vaccinations. While the rate may be low, allergic reactions, particularly anaphylaxis, can be life-threatening. In some cases, the frequency of severe reactions is high enough to withdraw an otherwise promising drug from the marketplace. In the investigation of the root cause of allergic reactions to a PEGylated drug, our lab established a sensitive method to accurately detect pre-existing immunogenicity to the PEG component of these products. In this presentation, I will discuss our new lab evidence of mast cell degranulation that links anti-PEG IgE to anaphylaxis caused by PEGylated Drugs and PEG-contained LNP/mRNA COVID vaccines.

Audience Take Away:

- PEGylated drug and PEG-contained COVID vaccine-associated anaphylaxis could be due to IgE-mediated type 1 hypersensitivity.
- DCBA assay with its unique sensitivity and specificity designing can accurately detect anti-PEG IgE.
- Evidence of type I hypersensitivity demonstrated by specific IgE-mediated mast cell degranulation upon PEG and vaccine exposure.

Biography:

Zhaohua (Joe) Zhou, Ph.D., is a Research/Review Scientist at the Office of Biotechnology Products, CDER, US Food & Drug Administration. Dr. Zhou's research interest is in the development of lab models to pinpoint and predict drug-induced acute allergic reactions. These methods are based upon and covering current understanding to the mechanisms of a clinical anaphylaxis, which, when using comprehensively, can quickly rule in and rule out drug quality related causes as well as predict patient sensitivity to therapeutics. Dr. Zhou's regulatory expertise in the FDA includes biotherapeutics CMC assessment and immunogenicity method assessment.

Ranjan Ramasamy*, Jyotsna Shah

IDFISH Technology, and IGeneX Inc., Milpitas, CA, USA

Diagnosis and differentiation of lyme disease and tick-borne relapsing fever borreliosis with multiplex line immunoblots

Lyme Disease (LD) is caused by certain species of tick-borne bacteria of the genus *Borrelia* termed Lyme Disease Borreliae (LDB). LD often causes chronic debilitating infections that are difficult to diagnose by clinical symptoms alone. The detection of serum antibodies to specific LDB antigens has a widely recognized role in supporting the diagnosis of LD, and a variety of immunoassay formats are presently used for this purpose. Recent findings highlight a need for serological differentiation of LD from Tick-Borne Relapsing Fever (TBRF) caused by a separate group of borrelia species termed Relapsing Fever Borreliae (RFB), because LD and TBRF share clinical symptoms and have an overlapping geographical distribution. The development of serological tests for TBRF is at an early stage compared with LD. The application of line Immunoblots (IBs), that utilize multiple proteins applied as lines on nitrocellulose membrane strips, for the serological diagnosis and differentiation of LD and TBRF are discussed in this presentation.

Audience Take Away:

- Appreciation of the complex immunodiagnostic needs in Lyme Disease (LD) and Tick-Borne Relapsing Fever (TBRF) borreliosis.
- Assist teaching of immunodiagnostics and clinical immunology.
- Improve the application of immunodiagnostic tests for tick-borne and other infectious diseases
- Advance understanding of immune responses in acute and chronic Borrelia infections.
- Help develop better immunoassays for medical and veterinary diagnostic purposes.

Biography:

Ranjan Ramasamy graduated from the University of Cambridge, UK and then obtained a PhD also from the University of Cambridge. He has since held academic appointments in the UK and abroad including Australia, Sri Lanka and the USA. He was the Chairman of the National Science Foundation of Sri Lanka, Professor of Life Sciences at the Institute of Fundamental Studies in Kandy in Sri Lanka, Professor of Biochemistry in the University of Jaffna in Jaffna Sri Lanka, Professor of Immunology in the University Brunei Darussalam Medical School and held institute appointments at the Babraham Institute in Cambridge in the UK & Scripps Clinic and Research Foundation in La Jolla in the USA. He has more 250 publications in fields pertaining to Medical Sciences. He was on the Committee on Scientific Planning and Review of the International Council for Science and the Board of Governors of the International Centre for Genetic Engineering and Biotechnology.

Mayra Ramos Suzarte

Center of Molecular Immunology, Cuba

Therapeutic repositioning of the monoclonal antibodies itolizumab and nimotuzumab in COVID-19

Since the first case of COVID 19 was reported in China in 2019, the world has turned to seek therapeutic alternatives for the treatment of this disease and search vaccines against it. About 300 million people in the world have been affected by the pandemic without recognizing ages until now, however, in older people the consequences have been worse since the presence of certain comorbidities such as high blood pressure, diabetes mellitus, renal failure among others were consolidated as aggravating predictors of mortality. The first patient in Cuba was reported in March 2020 and from this moment the use of two monoclonal antibodies (Mab) in the treatment of new pneumonia was repositioned: Itolizumab and nimotuzumab. itolizumab Mab is an anti-CD6 receptor and is able to blocks it in the activated lymphocytes due to the infection, with this therapy the inhibition of them was sought to avoid the syndrome of release of inflammatory cytokines such as IL6, IFN gamma among others.

In a second moment of the pandemic and after the role played by the Epidermal Growth Factor Receptor (EGFR) was reported, patients were treated with the Mabnimotuzumab, an anti EGFR that has been used for more than 20 years in the treatment of tumors of epithelial origin with recognized anti-tumor activity as an inhibitor of cell proliferation, metastasis, angiogenesis among other functions. In both treatment schemes, a recovery of more than 80% was achieved for severe patients and 90% for moderate patients, avoiding the critical stage of the disease. It was determined in both studies that the Neutrophil/Lymphocyte Inflammatory Indices (NLR) were predictors of the severity of the disease and that these were restored to normal with the treatments. The increase in IL6 levels was reduced. Patients who received mAbs had a risk of dying at least two times lower than those who did not. In the case of mAb nimotuzumab, pulmonary recovery was found without the appearance of fibrosis or its decrease one month after receiving the treatment, thereby reducing the sequelae of COVID-19. Today both monoclonal antibodies are part of the country's therapeutic arsenal in patients with the disease.

Biography:

Mayra Ramos Suzarte has completed her PhD at the age of 33 years from Havana Medical University and postdoctoral studies from Modena University, Oncological Medical Center, Italy and Las Condes Hospital Chile. She is the Head of Clinical trials Department at the Center of Molecular Immunology, Cuba since 2009. She has published more than 80 papers, and four books in reputed journals and has been serving as an editorial board member of repute, participated in more than 70 Congress.

SPEAKERS

DAY 01

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Safe and effective immunotherapy by targeting CTLA-4

Xuexiang Du*[1,2], Chunxia Ai[1,2], Mingyue Liu[2], Yan Zhang[2], Fei Tang[2], Musleh M. Muthana[2], Pan Zheng[2,3], and Yang Liu[2,3]
[1]Shandong University School of Basic Medical Sciences, China
[2]University of Maryland School of Medicine, USA
[3]OncoC4, Inc., USA

Cancer immunotherapy is becoming a powerful and acceptable treatment to malignant tumor in addition to traditional methods such as surgery, radiotherapy and chemotherapy. Anti-CTLA-4 monoclonal antibodies confer a Cancer Immunotherapeutic Effect (CITE) but cause Severe Immunotherapy-Related Adverse Events (irAEs). How to uncouple the undesired irAEs from the benefIVCl CITE seen in cancer patients treated with anti-CTLA-4 and/or other immunotherapies has proven to be a daunting challenge, partially due to the lack of the understanding of the real MOA(Mechanism of Action) of CITE and irAEs. First, we discovered that the immunotherapy of current anti-CTLA-4 mAbs were dependent on Fc/Fc receptor mediated intra-tumor Treg depletion rather than the widely held mechanism of checkpoint blockade, which raised the reappraisal of CTLA-4 checkpoint blockade in cancer immunotherapy; Second, we establish one realistic irAEs model and reveal one new mechanism of irAEs, while irAE-Prone Ipilimumab and TremeIgG1 rapidly direct cell surface CTLA-4 for lysosomal degradation, the non-irAE-prone antibodies we generated, HL12 or HL32, dissociate from CTLA-4 after endocytosis and allow CTLA-4 recycling to cell surface. Our data establish a new paradigm for cancer research that allows for abrogating irAE while increasing CITE of anti-CTLA-4 antibodies.

Audience Take Away:

- Reappraisal of CTLA-4 checkpoint blockade in cancer immunotherapy.
- He established one realistic irAEs model.
- He revealed one new mechanism of irAEs.

Biography:

Dr. Du obtained his PhD in Chinese Academy of Sciences in 2015. After he finished postdoctoral fellowships and Research Associate in the University of Maryland, Baltimore, he returned to China and be a full Professor in Shandong University. He focuses on cancer immunotherapy to dissociate the undesired immunotherapy related adverse events from the benefIVCl immunotherapies. April 25, 2022, the U.S. FDA has granted Fast Track designation to ONC-392, the next-gen anti-CTLA-4 Monoclonal Antibody (mAb) which he developed , as a single agent for the treatment of patients with metastatic NSCLC who have had disease progression on prior anti-PD-(L)1 therapy.

Generation and application of humanized mouse tumor models to expedite translational research for immuno-oncology

Wenjing Li[1], Chunlei Xia[1], Kun Wang[1], Liting Xue*[1], Yan Wang[1], Janine Y. Yang[2], Ming Yin[4], Zhenchuan Miao[4], Mingkun Zhang[3], Cunxiang Ju[3], Zhijian Yang[5], Renhong Tang[1] and Wenqing Yang*[1]

[1]State Key Laboratory of Translational Medicine and Innovative Drug Development, Jiangsu Simcere Pharmaceutical Co. Ltd, Nanjing, Jiangsu, China

[2]Harvard Medical School, Boston, MA, United States

[3]Gempharmatech Co. Ltd, Nanjing, Jiangsu, China

[4]Beijing Vitalstar Biotechnology Co. Ltd, Beijing, China

[5]ClinBridge Biotech Ltd, Nanjing, China

With the revolutionary progress of cancer immunotherapy, more clinically relevant preclinical animal models are needed to support the efficacy assessment, MOA elucidation and translational research for immune-oncology (I/O) drugs. Humanized murine models have been developed to study the interactions between cancer cells and humanized immune system constructed by transferring human immune cells (T, NK), tissues (fetal liver and thymus fragments), hematopoietic stem cells (HSC) to immunodeficient mice or by using genetically modified immunocompetent mice. With rapid growth of IO animal models in the field, there is a lack of systematic investigation and deep understanding of various models. Selecting suitable humanized animal models for different I/O targets is often challenging for researchers. In order to overcome those technical barriers, we have established multiple humanized animal models, including genetically engineered mouse models and immune cells (HSC, PBMC, NK) based humanized mouse models and exemplified their utility for the efficacy assessment of different I/O drugs which targeted regulatory T (Treg) cells, T cells and NK cells, respectively. The results showed that each mouse model has its characteristics and researchers must choose and generate mouse models based on the mechanisms of action for each test agent. Based on the systematic analysis of different humanized mouse models, we provide some tactical guidance and some detailed technical guidelines for generation of different humanized mouse models to address specific questions in immuno-oncology translational research.

Audience Take Away:

- In this poster, you will find professional methodological guidance on choosing and generating appropriate humanized animal models used in I/O translational research.
- We demonstrated practical values of humanized animal models and it will help scientists from research institutes and pharmaceutical companies by providing technical guidance to assist in design appropriate humanized mouse models.
- We will give examples on *in vivo* efficacy of a series of I/O drugs using humanized models.

Biography:

Dr. Wenjing Li studied Immunology at the Fudan University, Shanghai, China and gained a PhD degree in 2018. She then joined the State Key Laboratory of Translational Medicine and Innovative Drug Development at Jiangsu Simcere Pharmaceutical Co. Ltd. She is dedicated to translational research related to preclinical animal models & translational medicine and has published 9 research articles in SCI journals.

Regulatory T cells with chimeric antigen receptors as treatment for autoimmunity

Matthias Hardtke-Wolenski
Dept. of Gastroenterology, Hepatology & Endocrinology, Hannover Medical School, Hannover, Germany
Institute of Medical Microbiology, University Hospital Essen, University Duisburg-Essen, Essen, Germany

Adoptive immunotherapy with ex vivo expanded, polyspecific regulatory T cells (Tregs) is a promising treatment for graft-versus-host disease. Animal transplantation models used by us and others have demonstrated that the adoptive transfer of allospecific Tregs offers greater protection from graft rejection than that of polyclonal Tregs. This finding is in contrast to those of autoimmune models, where adoptive transfer of polyspecific Tregs had very limited effects, while antigen-specific Tregs were promising. However, antigen-specific Tregs in autoimmunity cannot be isolated in sufficient numbers.

Chimeric Antigen Receptors (CARs) can modify T cells and redirect their specificity toward needed antigens and are currently clinically used in leukemia patients. A major benefit of CAR technology is its "off-the-shelf" usability in a translational setting in contrast to major histocompatibility complex (MHC)-restricted T cell receptors.

We used CAR technology to redirect T cell specificity toward insulin and redirect T effector cells (Teffs) to Tregs by Foxp3 transduction. Our data demonstrate that our converted, insulin-specific CAR Tregs (cTregs) were functional stable, suppressive and long-lived in vivo.

This is a proof of concept for both redirection of T cell specificity and conversion of Teffs to cTregs.

Audience Take Away:

- The role of regulatory T cells in autoimmunity.
- The advantage of antigen-specific Tregs over polyspecific Tregs.
- The clinical feasibility of off-the-shelf CAR Tregs against MHC-restricted T cells.

Biography:

Matthias Hardtke-Wolenski is a research group leader in the Department of Gastroenterology, Hepatology and Endocrinology at Hannover Medical School since 2021 and in Institute of Medical Microbiology at University Medicine Essen since 2021. He is Head of Research in the Department of Gastroenterology and Hepatology at University Medicine Essen from 2018-2021.

Rise in allergies in Goa post COVID-19

Roque Gabriel Wiseman Pinto
Professor & Head, Department of Pathology, Goa Medical College, Bambolim- Goa, India, Ex Dean Goa University

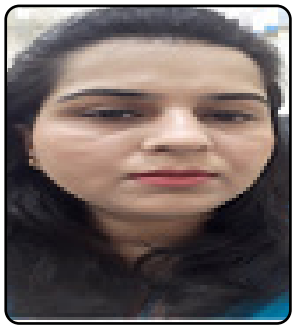
COVID-19 (SARS-CoV-2) Severe Acute Respiratory Corona Virus has caused a pandemic worldwide and changed the health care and the disease profile scenario worldwide. The effects are due to the

- COVID-19 Disease
- Vaccination
- Long COVID-19 syndrome

All these have led to the Immunological changes and alterations. This study was conducted in Goa.
The Urticaria cases were analysed and studies with respect to the age, sex, sites of involvement, severity. The laboratory tests were also analysed. Urticaria was due to the degranulation of Mast cells, and allergic response, during Pre COVID-19 period, we encountered 30 cases per week of urticaria. In the post COVID-19 period we encountered 40 cases per week of urticaria. Hence the rise of 25% post COVID period is taken as post peaks in Goa. In addition in Goa we also encountered a rise in the G. B. Syndrome, Autoimmune hemolytic anemia, Auto immune thrombocytopenia, Auto immune thyroid disease and other Autoimmune disease in the Post COVID-19 period. In addition there were respiratory complications, heart involvement, thrombosis, GIT involvement, fatigue, weakness, neurological symptoms, loss of smell and taste, joint pain; muscular pain and changes in menstrual cycles. Prolonged use of mask as also led to facial skin rash and allergy. In addition there were also fungal infections mostly mucormycosis which also had an allergic component, in addition to its life threatening complications.

Biography:

Dr. Pinto completed MBBS & MD Pathology from Goa Medical College & University of Bombay standing first in the University. He also passed National Board of Examination (DNB) in Pathology. He joined the Pathology Department of Goa Medical College on 1st February 1984 as a Demonstrator and has been promoted and served the Department as Lecturer, Assistant Professor, Associate Professor and Professor & Head and Dean Goa University. Currently he is the Professor and Head of Pathology Department, Goa Medical College. He has 230 Publications and has been invited as Faculty for International Conferences, CMEs and workshops all over the World. He is the Editor in Chief of Todays ClinIVCn and Member of Editorial Board of many Journals. He has organized many International Conferences and CMEs, in Goa and has held many prestigious positions in Academic bodies like President Indian Academy of Cytologists, President Asian Society of Cytopathology, Chairman International Affairs Committee, IAC, Chairman, Board of Studies, Goa University, Executive Council Member Goa University, Academic Council Member Goa University, Chairman Multi Disciplinary Research Unit (MRU), Professor In charge Medical Education Unit, Goa Medical College.



Methotrexate nanoparticles ameliorate freund's complete adjuvant induced arthritis in wistar rats

Bushra Akhtar*[1], Muhammad Usman Saleem[2], Ali Sharif[3], Faqir Muhammad[4]

[1]Department of Pharmacy, University of Agriculture, Faisalabad, Pakistan

[2]Institute of Physiology and Pharmacology, University of Agriculture, Faisalabad, Pakistan

[3]Institute of Pharmacy, Faculty of Pharmaceutical and Allied Health Sciences, Lahore College for Women University, Lahore, Pakistan

[4]Department of Bioscience, Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan, Pakistan

Rheumatoid Arthritis (RA) is a chronic autoimmune disease and is characterized by inflammation, tissue damage and functional impairment. Methotrexate (MTX) is used in treatment of RA but numerous adverse effects are associated with its use. It has fast clearance as well. These factors lead to poor patient compliance. In order to reduce these problems, the current study was conducted which is focused on engineering of MTX loaded biodegradable nanoparticles and to explore their effect in Freund's complete adjuvant (FCA) induced Wistar rats. Experimental animals (n=30) were randomly divided into 5 groups where 1st group was healthy control, 2nd was arthritic control, 3rd was MTX administered while 4th and 5th were treated with Methotrexate Nanoparticles (MTX-NPs) at different dose levels.

Nanoparticles were prepared using biodegradable polymer, chitosan, by method of solvent evaporation, and were characterized by zeta size, fourier transform infrared spectroscopy and polydispersity index. The prepared NPs exhibited size of 190nm and PDI of 0.25. After FCA administration, rise in paw thickness was recorded up to 21 days which was ameliorated by MTX-NPs (high dose). The pro-inflammatory markers level i.e. IL-6 and TNF-α as well as superoxide dismutase & catalase were also found to be reduced in MTX-NPs treated groups in comparison to arthritic group. The ameliorated effect of MTX-NPs was also confirmed by hematological, biochemical, radiological and histopathological investigations of experimental rats. Based upon these findings, it is concluded that MTX-NPs might be promising candidates for treatment of FCA induced arthritic rats. However, further studies are required for safety of MTX-NPs as well as for dose optimization of these nanoparticles.

Audience Take Away:

- The topic will be useful for researchers working on arthritis and nanomedicine. It will help to understand the comparative effects of MTX and MTX nanoparticles prepared using biodegradable polymer i.e. chitosan.
- The topic is relevant to the pre-clinical testing of FCA induced arthritis in Wistar rats. The audience will understand the ameliorative effect of MTX-NPs on experimental animals.
- Future directions have been mentioned in the last line of abstract which can be used for other faculty and researchers for exploring the safety and dose optimization of these NPs. This can be used for teaching the effect of oxidative stress and pro-inflammatory markers in FCA induced arthritis model in rats.

Biography:

Dr. Bushra Akhtar studied Pharm-D from Bahauddin Zakariya University, Multan, Pakistan in 2010. She then completed M. Phil in Pharmacology and Toxicology from University of Veterinary and Animal Sciences, Lahore, Pakistan in 2013. She then joined University of Agriculture, Faisalabad, Pakistan as lecturer. She did P.hD in Pharmacology in 2019 from the same institution. She has published around 50 research articles in impact factor journals. She has supervised 18 M.Phil students as major supervisor.

Differentiation discoid lupus erythematosus associated-scaring alopecia from lichen planopilaris by immunostaining of CD123 marker

Maliheh Amani
Department of Dermatology, Gonabad University of Medical Sciences, Iran (Islamic Republic of)

Introduction: Scarring alopecia (CicatrIVCl Alopecia) refers to disorders that are characterized by the irreversible destruction of hair follicles and permanent alopecia. Scarring alopecia is categorized into primary and secondary. Primary scarring alopecia (cicatrIVCl alopecia) implies disorders that directly damage hair follicles. PP and DLE are the most common causes of scarring alopecia. Clinical and histological features may overlap between lichen planopilaris- associated and discoid lupus erythematosus-associated scarring alopecia; consequently, establishing a definite diagnosis may be challenging and difficult based on clinical, dermoscopic and histological features alone. These concerns underscore the need for useful adjunct diagnostic techniques, including direct immunofluorescence and Immunohistochemistry (IHC). Plasmacytoid Dendritic Cells (PDCs) are antigen-presenting cells that play an important role in the innate immune response. The presence of these cells and their specific distribution pattern in the tissue may help to distinguish lupus erythematosus from other inflammatory disorders such as LPP. We aimed to perform a study to evaluate the presence and distribution pattern of PDCs by immunostaining the CD123 marker in patients with LPP and DLE, which are the most common causes of primary scarring alopecia.

Method: Twenty-four cases of discoid lupus erythematosus and 30 cases of lichen planopilaris were examined for immunostaining of the CD123 marker. The percentage and distribution pattern of plasmacytoid dendritic cells and the presence of the plasmacytoid dendritic cells clusters were evaluated in the samples.

Results: The mean percentage of PDCs are higher in DLE slides than LPP ones and the perifollicular and perivascular region show the highest density of PDCs in both DLE and LPP. Neither DLE nor LPP showed the intraepidermal infiltration of PDCs. The involvement of the dermal-epidermal junction and the subcutaneous region was notable in DLE specimens which the other studies had not to evaluated. The perieccrine and intrafollicular infiltration in a small number of the DLE cases was detected but not in any of the LPP cases. Interstitial infiltration in many of the LPP cases and small number of the DLE cases was observed. Our study is the first study of its kind to evaluate the subcutaneous region for the presence of PDCs in DLE and LPP, and these cells at the subcutaneous tissue in both DLE and LPP was detected. Also, we discovered the PDCs were mostly observed along the deep part of hair follicles at the subcutaneous tissue of the LPP specimens, while they were more scattered through the subcutis in the DLE specimens. Aggregations of 10 cells or more (large cluster) were observed in half of the discoid lupus erythematosus specimens and only 2 lichen planopilaris, with 50% sensitivity and 93% specificity for differentiating discoid lupus erythematosus from lichen planopilaris. These large clusters were often localized at the perifollicular and perivascular region.

Conclusion: We suggest that a plasmacytoid dendritic cells cluster of 10 cells or more is highly specific for distinguishing discoid lupus erythematosus from lichen planopilaris. It also appears that CD123 immunolabeling is valuable in both active and late stages of the disease.

Biography:

Dr. Maliheh Amani completed her MD at Birjand University of Medical Sciences in Iran. She then completed her dermatology residency at Shahid-Beheshti University of Medical Sciences. Dr. Amani has been working as a dermatologist at Allameh Bohlool Gonabadi Hospital, Gonabad University of Medical Sciences since 2019. In all, Dr. Amani has accumulated years of focused study and practice in dermatology, which she has continually applied to the improved diagnosis and treatment of skin conditions and diseases. She does research specially in field of Genodermatoses, Laser surgery, vitiligo, alopecia and Dermatopathology. She serves as an editorial board member in numerous international medical journals.

The effect of subcutaneous omalizumab therapy on the allergic conjunctivitis symptoms of patients being treated for asthma

Esin Kirikkaya
Health Sciences University Izmir Tepecik Training and Research Hospital, Turkey

Purpose: To evaluate the effect of subcutaneous omalizumab therapy on the allergic conjunctivitis symptoms of patients being treated for asthma.

Methods: A total of 84 eyes of 42 patients who were receiving subcutaneous omalizumab therapy for asthma and complained of allergic conjunctivitis symptoms underwent complete ophthalmic examination. All of the patients were graded according to signs and symptoms and duration of symptoms, evaluated using an ocular severity index (SI) and quality of life questionnaires. Immunoglobulin E (IgE) levels and both initial and final %FEV1 (forced expiratory volume in the first second) values were also evaluated. p values \0.05 were accepted as statistically significant.

Results: The study included 36 women (85.7%) and 6 men (14.3%) with a mean age of 54.5 ± 10.8 years. The mean duration of omalizumab therapy was 46 ± 30.9 months. There were statistically significant changes between initial and final values for ocular SI, quality of life, subjective symptom frequency and severity and %FEV1. Final values of SI, quality of life, and symptom severity and frequency were statistically significantly lower compared to initial values, while final %FEV1 was statistically significantly higher compared to initial value (p\ 0.001).

Conclusion: Omalizumab therapy for asthma had a favorable effect on the patients' allergic conjunctivitis symptoms and decreased parameters related to ocular disease severity, improved quality of life and increased %FEV1values.

Biography:

Esin Kirikkaya was born in Izmir/Turkey. She is graduated from Ege University, faculty of Medicine and she completed her ophthalmology residency at Ege University, faculty of Medicine, Department of Ophthalmology in Izmir. She worked at a Training and Research Hospital in Izmir. She is a member of Turkish Ophthalmology Society. She is Fellow of European Board of Ophthalmology (FEBO). She is working in this field since 2004.

Autoptic findings in VITT (Vaccine-Induced Immune Thrombotic Thrombocytopenia alias Vaccine Induced Thrombosis with/withoutThrombocytopenia)

Luca Roncati
Institute of Pathology, Department of Surgery, Medicine, Dentistry and Morphological Sciences withinterest in Transplantation, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Polyclinic Hospital, Modena, Italy

Vaccine-Induced Immune Thrombotic Thrombocytopenia (**VITT**), also known as Vaccine-Induced Prothrombotic Immune Thrombocytopenia (VIPIT) or Vaccine-Associated Thrombotic Thrombocytopenia (VATT) or Thrombosis with Thrombocytopenia Syndrome (TTS), is a rare potentially lethal blood clotting disorder first described after adenoviral vector-based vaccines against coronavirus disease 2019 (COVID-19). Both arterial and venous thrombosis may occur, including unusual sites such as the cerebral venous sinus or splanchnic vein. Therefore, the vaccines' package inserts have been updated about this risk, as well as that concerning with venous thromboembolism without thrombocytopenia or immune thrombocytopenia without thrombosis. The life-threatening trigger of these post- vaccinal adverse events has been identified in the production of pathological platelet- activating antibodies against Platelet Factor 4 (PF4). By definition, the gold-standard criteria which must all be met for a definitive diagnosis of VITT are: Anti-COVID-19 vaccine 4 to 42 days prior to symptom onset; any venous or arterial thrombosis (often cerebral or abdominal); thrombocytopenia (platelet count $<150\times10^3/mm^3$); positive PF4 Heparin-Induced Thrombocytopenia (HIT) Enzyme-Linked Immunosorbent Assay (ELISA); (V) markedly elevated D-dimer (>4 times upper limit of normal). Besides adenoviral vector-based vaccines, there are also those exploiting a modified messenger ribonucleic acid (modRNA) technology, deem free from thrombotic complications. Indeed, my research group has investigated in depth a three-case series of thrombotic deaths in patients over fifty with comorbidities temporally after modRNA COVID-19 vaccination, all without thrombocytopenia. In light of these new acquisitions, a more appropriate rendering of the acronym **VITT** appears to be **V**accine **I**nduced **T**hrombosis with/without **T**hrombocytopenia. Although remote in the face of millions of administered doses, clinIVCns should be aware of the possible thrombotic risk also after modRNA COVID-19 vaccines, in order to avoid a misdiagnosis with potentially fatal consequences.

Audience Take Away:

- Full understanding of VITT immunology.
- In-depth knowledge of COVID-19 vaccines.
- Prompt life-saving diagnosis of VITT with or without thrombocytopenia.

Biography:

Dr. Luca Roncati, Italian pathologist, physIVCn-scientist, anti-cancer patent inventor, academiceditor, medical lecturer, and award-winning author with more than 250 publications to his credit, specialized in gynecologic oncology and hematopathology, eponym of Roncati-Manenti triad, describer of T rex lymphoma, pioneering researcher in COVID-19, forensics expert and adjunct professor of anatomical pathology at the University of Modena and Reggio Emilia (Italy).

Immunological disorders due to occupational exposures

Amal Saad-Hussein
Environmental & Occupational Medicine Department, Environment & Climate Change Research Institute, National Research Centre, Prof. of Environmental & Preventive Medicine, Cairo, Egypt

Immune disturbances are described among wide variety of occupational exposures to chemical, biological or physical pollutants. Several studies have shown that occupational chronic exposure to pesticides, mycotoxins, organic solvents, dyes, heavy metals; such as mercury, cadmium, lead, arsenic, aluminium, nickel and other heavy metals, can be linked to the autoimmune process, that may result in immune disorders and autoimmune diseases. Although approximately 70% of the risk for developing autoimmune thyroid disease; as an example, is attributable to genetic background, environmental triggers are thought to play a role in the development of autoimmune thyroid disease in susceptible individuals. Systemic lupus erythematosus is a chronic multisystem autoimmune disorder is also suggested to be an interaction between both genetic and environmental factors. Occupational exposure to cotton dust found to be associated with the risk of development rheumatoid arthritis with the elevation of the mycotoxins in their bodies.

Therefore, environmental and occupational health studies are essential target for planning a sustainable strategy for protection and safety, early detection, and prediction of the disabling health problem to avoid losses of the valuable manpower and to minimize the medical and economic costs. This presentation will focus on adopting for early detection of workers at risk to develop immunological disturbances; such as autoimmune thyroid disease, systemic lupus erythematosus, and rheumatoid arthritis in workers occupationally exposing to environmental potential autoimmune triggers in their working places, in form of occupational exposure to pesticides, mycotoxins, dyes, heavy metals, organic solvents, … etc. The accumulations role of these environmental pollutants in the body of the exposed workers in developing autoimmune disorders and gene polymorphism that plays a role in this accumulation will be presented.

Audience Take Away:

- (Environmental triggers to autoimmune disorders; Occupational exposures to autoimmune triggers; Gene polymorphism for environmental autoimmune trigger susceptibility).
- The presentation will give a focus on the environmental and occupational pollutants that will trigger autoimmune disorders, and the gene polymorphism play role in accumulation of the environmental triggers.
- They will develop knowledge about early prediction of the environmental and occupational pollutants triggers autoimmune diseases.
- Yes, this presentation will target planning a sustainable strategy for protection and safety, early detection, and prediction of the disabling health problem to avoid losses of the valuable manpower and to minimize the medical and economic costs.
- Planning a sustainable strategy for protection and safety, early detection, and prediction of the disabling health problem.
- Avoid losses of the valuable manpower and to minimize the medical and economic costs.

Biography:

Amal Saad-Hussein is an Emeritus Professor of Environmental health. She is Former Dean of Environment & Climate Change Research Institute (2016-2020), and Former Head of Environmental & Occupational Medicine Department (2011-2016), National Research Center (NRC), Egypt. She is Member in the Environmental Research Council, and in National Committee of Toxicology, ASRT, Egypt. She is an International expert in WGII-IPCC, and internal expert in Central Administration of Climate Change in the Egyptian Environmental Affairs Agency. Her Ph.D., M.D., MPH were Public Health and Environmental Medicine from Faculty of Medicine, Cairo University. She was certificated "Environmental and Health Risk Assessment and Management of Toxic Chemicals", from Chulabhorn Research Institute, Thailand, and obtained several scientific prizes; Technological Creation Prize of NRC (2006), Prize of Environmental Research and Environmental Education from ASRT (2007), and Certificates of Excellence in Scientific Productions for years 2009, 2010, 2011, 2012, 2013, 2014, and 2015 from NRC.

An update on childhood immunization: Africa perspective

Emmanuel Ifeanyi Obeagu
Department of Medical Laboratory Science, Kampala International University, Western Campus, Ishaka, Uganda

Immunization remains one of the cheapest and most cost effective means of protecting the masses from vaccine preventable diseases.Factors affecting Childhood immunization uptake at general practice level may be considered in terms of sociodemographic variables, attitude and practice. This review was done to enlighten the public on Childhood Immunization in Africa. Different search engines were consulted to explore the literatures and ascertain the gaps in knowledge on Childhood Immunization in Africa. There has been increasing emphasis on preventive care, which has resulted in systematic differences in the success of practices for child immunization. Results indicate a high incidence of immunization practice among the households. Immunization for children is the effective, safe and efficient public health interventions to prevent childhood morbidity and mortality. This review found that most men have good knowledge, positive attitude with poor practice and involvement of immunization. There is a need to increase awareness about the benefits and importance of vaccination, as well as the harmful consequences of non-complete immunization.

Audience Take Away:

- Immunization.
- Childhood immunization in Africa.
- Factors affecting immunization in Africa.
- Ways to improve childhood immunization in Africa.

Biography:

Dr. Emmanuel Ifeanyi Obeagu obtained his PhD in Hematology and Blood Transfusion Science from Imo State University in 2019. He joined Kampala International University, Western Campus, Uganda 2022. He performs dual roles in academics and Research. He is a passionate researcher who has published many papers in reputable journals both locally and internationally and has earned many international awards through dedication. He is an editor to many journals and also a reviewer to many journals. He attends many conferences on different capacities.

Altered systemic and intestinal IgA immune responses in individuals with type 1 diabetes

Juan Huang*[1,2], Gan Huang[1], Xia Li[1], Fang Hu[1], Zhiguo Xie[1], Yang Xiao[1], Shuoming Luo[1], Chen Chao[1], Keyu Guo1, Florence S. Wong[3], Zhiguang Zhou[1] and Li Wen[2]

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[2]Section of Endocrinology, Department of Internal Medicine, Yale University School of Medicine, New Haven, Connecticut, USA

[3]Division of Infection and Immunity, School of Medicine, Cardiff University, Cardiff, U.K

Objective: Increasing evidence supports the observation that IgA exerts a critical effect on the susceptibility to autoimmunity by modulating gut homeostasis and subsequent host immunity. We hypothesized that the IgA immunity is altered in individuals with Type 1 Diabetes. To test our hypothesis, we investigated intestinal, oral and peripheral IgA immune responses in individuals with Type 1 Diabetes.

Methods: We collected stool, oral cavity, and blood samples from subjects diagnosed with Type 1 Diabetes (within one year and over one year) and healthy control individuals. Serum islet autoantibody titres were detected by radio ligand assays. IgA-bound-bacteria and IgA-expressing B cells were studied by flow cytometer. Oral free IgA level was measured by ELISA. Serum and stool free IgA concentrations were determined by immune-turbidimetry method.

Results: Individuals diagnosed with Type 1 Diabetes within one year had an increased proportion of stool IgA-bound-bacteria, compared with healthy control individuals. The proportion of stool IgA-bound-bacteria was positively associated with the Glutamic Acid Decarboxylase Autoantibody (GADA) titre. Moreover, individuals with a longer duration of disease displayed a higher level of IgA-bound-bacteria than those diagnosed within one year. In contrast to healthy control individuals, Type 1 Diabetes patients had increased serum IgA concentrations.

Conclusions: Individuals with Type 1 Diabetes display altered IgA immunity, especially increased stool IgA-bound-bacteria, which is likely to contribute to beta-cell autoimmunity and the disease development, and thus, might be considered as a novel therapeutic target for the treatment of Type 1 Diabetes.

Biography:

Dr. Huang belongs to Yale University.

Cardiac and vascular dysfunction in patients with multiple sclerosis

Marina Awad*[1], Hesham Boshra[2], Mona Hussein[3], Ehab Elyamani[4]
[1,2,4]Cardiology department, Faculty of Medicine, Beni-Suef University, Egypt
[3]Neurology department, Faculty of Medicine, Beni-Suef University, Egypt

Background: Much concern was directed towards studying cardiovascular dysfunction in patients with Multiple Sclerosis (MS). However, the mechanisms of such dysfunction are not completely elucidated.

Aim of the work: The aim of our work was to assess cardiac and arterial functions in patients with relapsing-remitting MS and to correlate those functions with clinical and radiological findings.

Methods: This case-control study was conducted on 50 patients with MS and 50 controls. Cardiac function was assessed for all subjects using conventional two-dimensional echocardiography, tissue doppler imaging, and Speckle Tracking. Arterial function was assessed by pulse wave velocity (PWV) and augmentation index (AIX), measured by the Brachial Cuff-Based Method via Mobil-O-Graph device. The arterial structure was also assessed by carotid IMT, using carotid ultrasound. Serum lipids were also measured in all participants.

Results: The LV systolic function was significantly decreased in MS patients, confirmed by significantly lower LV 2D ejection fraction, mitral annular plane systolic excursion, longitudinal myocardial systolic velocities, higher LV myocardial performance index, and lower LV global longitudinal strain, compared to controls. The LV diastolic function was significantly decreased in MS patients, confirmed by significantly lower mitral inflow E/A ratio, higher peak TR velocity, lower longitudinal myocardial diastolic velocities, higher mitral E/E` ratio and longer LV isovoulmetric relaxation time, compared to controls. The RV function was also significantly decreased in MS patients, confirmed by significantly lower tricuspid annular plane systolic excursion, lower longitudinal systolic and diastolic velocities, higher RV myocardial performance index and higher pulmonary artery systolic pressure, compared to controls. No significant correlation was found between cardiac function and disease duration or severity. Meanwhile, the arterial function was significantly reduced in MS patients, confirmed by significantly higher PWV and AIX, but carotid CCA IMT was similar between the two groups with no plaques in any of the patients. A significant positive correlation was found between PWV and both disease duration and disability. Serum total cholesterol and triglycerides levels were significantly higher in MS, compared to controls, while HDL-cholesterol levels were significantly lower in MS patients, compared to controls. No significant correlation was found between serum lipids and disease duration or disability.

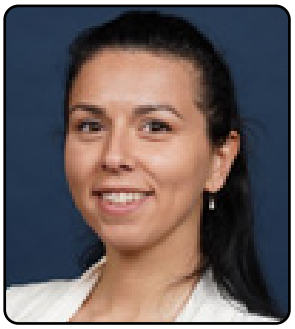
Conclusion: Patients with MS had significantly reduced biventricular functions, in addition to significantly reduced arterial function, compared to the healthy controls. Cardiac function was not significantly correlated with disease duration or disability, in contrast to arterial function which was significantly correlated with disease duration and disability. MS patients had significantly higher serum levels of T-cholesterol and triglycerides and significantly lower serum level of HDL-cholesterol, compared to controls.

Audience Take Away:

- They can know more and more about multiple sclerosis as a neurological autoimmune disease.
- They can know if multiple sclerosis can cause cardiac dysfunction.
- They can know if multiple sclerosis can cause vascular dysfunction.
- They can know if multiple sclerosis can know dyslipidemia.
- They can understand the supposed mechanisms of cardiovascular affection in multiple sclerosis.
- They can know about some new modalities in assessment of cardiac and vascular function.
- They can know about the correlation between cardiovascular dysfunction and disease parameters.
- The audience can use what they learn by paying more attention to this group of patients, being at higher cardiovascular risk than the general population.
- This presentation can help different specialties, like neurologists that can learn more about the cardiovascular aspects of their MS patients, so they can refer them to cardiologists if they suspect any cardiac or vascular problem. It can also help cardiologists by teaching them new modalities of cardiovascular assessment like speckle tracking, and the use of a relatively new device Mobil-O-Graph, so this research can add much to the field of Cardio-Neurology, opening a new access to studying the cardiac aspects of more neurological diseases.

Biography:

Marina Awad, 30 years old, graduated at 2015, Beni-Suef University. She is an assistant lecturer of cardiology, Beni-Suef University hospital. She have been working on the field of clinical cardiology for about 4 years. She has completed master degree in cardiology in 2021, with a special interest in the field of cardio-neurology. She have worked on the patients of multiple sclerosis trying to find an answer if multiple sclerosis can cause some impairment in cardiovascular function. Until now, and she have internationally published one paper, taken from master thesis, with another paper on its way to publication.



Cytopathological assessment is an accurate method for identifying immunophenotypic features and BRCA1/2 mutations of high-grade serous carcinoma from ascites

Miceska Simona*[1,2], Skof Erik[1,2], Novakovic Srdjan[1], Vida Stegel[1], Jericevic Anja[1], Grcar Kuzmanov Biljana[1], Smrkolj Spela[3], Cvjeticanin Branko[3], Bebar Sonja[1], Globocnik Kukovica Marta[1], and Kloboves-Prevodnik Veronika[1,4]

[1]Institute of Oncology Ljubljana, Slovenia

[2]Faculty of Medicine, University of Ljubljana, Slovenia

[3]University Medical Centre, Ljubljana, Slovenia

[4]Faculty of Medicine, University of Maribor, Slovenia

Background: High-Grade Serous Carcinoma (HGSC) is the most common and aggressive type of ovarian cancer, and is often associated with ascites at presentation. Our objective was to evaluate the accuracy of cytopathology to identify immunophenotypic features of HGSC and *BRCA1/2* mutations from ascites.

Methods: The study included 45 patients with histologically confirmed primary HGSC and malignant ascites. Immunocytochemical (ICC) staining for PAX8, WT1, P53, P16 and Ki67 was performed on cytospins and cytoblocks prepared from ascites. Next-Generation Sequencing (NGS) was used to detect germline/somatic BRCA1/2 mutations in the ascites. Both ICC and NGS results were compared to Immuno histochemical (IHC) and NGS results from tissue blocks of primary tumor. Cronbach's α and Chi-square statistics were used, respectively.

Results: ICC/IHC results for PAX8, WT1, P53 and P16 showed good reliability between cytospins, cytoblocks and tissue blocks ($\alpha>0.75$), whereas poor reliability and significant difference were observed for Ki67 between ascites and tissue blocks ($\alpha<0.26$, $p<0.001$). A 100% concordance was confirmed for germline *BRCA1/2* mutations, but only 14% concordance for somatic mutations.

Conclusion: Our results demonstrate that cytopathology is an accurate method for identifying immunophenotypic features of HGSC and detecting germline *BRCA*1/2 mutations from ascites. However, further investigation is required for assessing the proliferation activity of HGSC in ascites as well as detecting somatic *BRCA1/2* mutations.

Audience Take Away:

- The potential of liquid biopsy in oncology.
- The importance of immunophenotyping in cytology for establishing a diagnosis without surgery.
- The advantages and disadvantages of sequencing mutations from cytological samples instead of tumor tissue.

Biography:

Simona Miceska was born in Macedonia, where she finished high school with golden grades. Afterwards, she completed her BSc and MSc degrees at the Biotechnical faculty of Ljubljana, Slovenia studying biotechnology and molecular biology respectively. At the moment she is a PhD candidate in the final year at the Medical Faculty of Ljubljana, performing her research on ovarian cancer at the Institute of Oncology Ljubljana. During her PhD she received many awards and participated in different projects. She is a Fulbright alumnus at Washington University School of Medicine in St. Louis, MO, USA and Erasmus alumnus at KU Leuven, Belgium.

The crucial role of stem cells in NK cell production and enhancement of NK cell activity in pancreas cancer

Gulinnaz Ercan
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Pancreatic Cancer (PaCa) is an aggressive progressive malignant carcinoma with an average life span of less than 5%. Mesenchymal Stem Cells (MSCs) are multipotent Stem Cells (SCs) with promising potential for cancer research. Recently, these cells draw attention because of their importance for tissue microenvironment and their ability of suppressing immune system. Adipose tissue, Umblical Cord (UC) and Cord Blood (CB)-derived MSCs are easily and abundantly obtained SCs, which have the potential to be used in many areas of medicine via being transformed into the cell type required. UC and CB are rich sources of multipotent SCs which can be obtained easily and abundantly after delivery. Natural Killer cells (NKs), are innate immune system cells which have the ability to kill tumor cells without prior sensitization. Allogeneic NK cells are considered to be more effective in cancer treatment, as cancer cells can escape from autologous NK cells by adapting to express the MHC class I surface marker. So there is a need of producing NK cells from different cell sources and MSCs are good candidates for this purpose. Previously, we have shown that ADMSC-derived NKs are more efficient via miR150 transfection which is responsible for the development and function of NKs and transfected/untransfected NKs were found to be cytotoxic on PaCa cells (PANC1) in vitro. We made in vivo analyzes of this study using NKs from different MSC sources (ADMSC, CBMSC and UCMSC). NKs were characterized before/after miR150 transfection via IHC and FC analyzes of CD34, CD90, CD314 (NKG2D), CD56 (NCAM) and NKp46 (NCR1). UCMSC-derived NKs were found more efficient and abundant and were evaluated in vivo for their antitumor activity on heterotopic PaCa model in CD-1 nude mice via applying IL2 and IL15 to increase NK activity. Mice were sacrificed and the tumor tissues were excised when the tumor size significantly decreased in the NK/IL treated mice. Bax, Bcl2, caspase3 and caspase1 were evaluated via IHC while the expression analyses of KRAS, TP53, CDKN2A, TGFBR2 and ARID1A genes were determined by RT-PCR in tumor tissues and plasma granzyme B, perforin, INFγ and IL18 levels were determined by ELISA. Tumor size significantly decreased, while tumor suppressor gen expression (TP53 and ARID1A) significantly increased in NK/IL treated mice.

This study showed the potential of miR-150 transfected NKs as novel immunotherapeutic treatment strategies for PaCa. In recent years, it has been determined that MSCs show their regenerative, antitumoral and immunomodulatory effects in their target region through a paracrine effect via the exosomes they secrete. UCMSCs are immunomodulatory SCs that can be obtained easily and abundantly and are suitable for allogeneic use. Since exosomes derived from MSCs (MSC-ex), have both the advantages of exosomes and the properties of MSCs, exosome research is valuable. Exosomes are small endogenous membrane-bound vesicles that mediate communication between cells by transmitting genetic material. They are nanoparticles with strong cargo loading capacity and the ability to cross barriers such as the blood-brain barrier. Therefore, they have the potential to be used as drug delivery vehicles in targeted therapy. Since our results are encouraging for further in vivo studies we decided to continue our research via investigating anti-cancer efficiency of NK cells and miR-150 loaded UCMSCs-ex derived from UCMSCs in vitro and in vivo in PaCa. I will present my unpublished data and future research projects.

Audience Take Away:

- They will be able to learn the contribution of stem cells in producing NK cells.
- They will be able to learn how stem cells and their exosomes enhance NK cell function.
- Our aim is to fight against disease and cancer via using stem cells to produce cells capable of killing cancer cells and increase the efficiency of our natural immune system. The audience will be able to learn the crucial role of stem cell therapy.
- They will be able to learn how to prepare NK cells in the laboratory via using hematopoietic induction and differentiation methods and to assess their efficiency in vitro and in animal models in vivo in nude mice in heterotopic pancreas cancer model.

Biography:

Dr. Gulinnaz ERCAN graduated from Ege University Medical School (EUMS) in Turkey (I986). She became a specialist in Biochemistry and Clinical Biochemistry at EUMS, Dept. of Biochemistry (1993). She was an observer in EVMS, Norfolk, VA, USA (1992). She finished a one-year postdoctoral fellowship programme in USC, CA, USA and in Dept. of Biochemistry and Molecular Biology in Autonoma Barcelona University MS, Barcelona, Spain (2003). She became a Professor in Biochemistry in EUMS, Turkey (2006). She finished Stem Cell training in King's College London, Diabetes Research Center, UK (2011) and is the Prof. of Stem Cell Dept., EU Institute of Health Sciences, Turkey (2012). She has published more than 70 research articles in SCI (E) journals.

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Kaposi Sarcoma Associated Immune Reconstitution Inflammatory Syndrome (KS-IRIS) – Recognition and treatment in the age of advancing antiretroviral therapy

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Highly Active Antiretroviral Therapy (HAART) has substantially reduced the prevalence of Kaposi Sarcoma (KS), yet its effectivity has rendered a new phenomenon, KS-IRIS, a serious condition where patients experience paradoxical worsening after HAART initiation that can lead to rapidly progressive papulonodular skin lesions, visceral organ involvement, respiratory distress and death. Approximately 50 cases of KS-IRIS have been previously reported, highlighting the uncommon nature of the syndrome. However, considering how rapidly progressive and fatal the syndrome is, early recognition and management is critical.

Case Report: Our patient was a 35 year old white male with HIV diagnosed in 2019 who initially presented to an outpatient infectious disease clinic with a two month history of worsening violaceous rash on his neck, fatigue, night sweats, lymphadenopathy, lower extremity swelling, chronic watery diarrhea, and weight loss in the setting of HAART non-compliance for the past ten months. After evaluation and biopsy of the lesions (positive for KS), the patient was started on Bictegravir/ emtricitabine/ tenofavir alafenamide 50/200/25 and advised for close follow up. He returned two weeks later with worsening rash that had extended with greater than 20 lesions, diffuse shotty axillary, cervical, and inguinal lymphadenopathy, and severe watery stools concerning for KS-IRIS. The patient was subsequently admitted for observation and initiation of liposomal doxorubicin chemotherapy. Labs on admission showed a CD4 count of 139 cells/mm^3 with a viral load of 128 copies/mL. CTAP showed diffuse lymph node enlargement, hepatosplenomegaly, and lymph node biopsy results were positive for KS. During the course of his staging, the patient's clinical status significantly improved with reduction in the number of lesions, resolution of his diarrhea, and gradual reduction in hepatosplenomegaly on daily examination. Given the patient's KS-IRIS resolved and his biopsy results were negative for lymphoma, the decision was made not to pursue chemotherapy, and he was discharged on day five with HAART and close follow up.

Discussion: KS is generally seen with HAART non-compliance (in our patient's case) or undiagnosed HIV/AIDS. There was a glaring temporal association with the re-initiation of HAART and the rapid worsening of our patient's disease burden, which raised initial concerns for IRIS. *Kitahada et al* analyzed a cohort of patients that present with AIDS defining opportunistic infections and found an overall 11% incidence of IRIS after initiating HAART, with a 16% incidence of KS-IRIS. Often chemotherapeutic agents are used for KS-IRIS in patients with significant tumor burden, with the most common being liposomal doxorubicin, however other therapies include etoposide, bleomycin, or vincristine, yet these regiments have had difficulty showing a consistent difference in mortality. In the case of our patient, we decided to monitor the course of his condition before starting chemotherapy since he showed significant clinical improvement over the course of a few days.

Conclusion: PhysIVCns must keep a high degree of suspicion for IRIS in the treatment naïve or re-initiators, specifically patients with a baseline opportunistic infection, in order to reduce morbidity and mortality with shared patient decision making about chemotherapy use considering tumor stage, disease burden, and prognosis.

Audience Take Away:

- Clinical signs and symptoms of Kaposi Sarcoma Immune Reconstitution Syndrome.
- Chemotherapeutic modalities that can be used to acutely reduce tumor burden.
- Ensure clinIVCns are aware of the rapidly progressive and fatal nature of the syndrome specifically in those with underlying opportunistic infections.

Biography:

Alec Bigness studied Chemistry at Florida Southern College in Lakeland, Florida and is a current medical student at the University of South Florida, Morsani College of Medicine. He has published 7 articles in SCI (E) journals.

Treg-specific IL-2 therapy can reestablish intrahepatic immune regulation in autoimmune hepatitis

Laura Elisa Buitrago Molina
Dept. of Gastroenterology, Hepatology & Endocrinology, Hannover Medical School, Hannover, Germany

Autoimmune Hepatitis (AIH) is a chronic autoimmune inflammatory disease that usually requires life-long immunosuppression. Frequent relapses after discontinuation of therapy indicate that intrahepatic immune regulation is not restored by current therapies. As steroid therapy preferentially depletes intrahepatic regulatory T cell (Tregs), immune regulation might be re-established by increasing and functionally strengthening intrahepatic Tregs. In recent clinical trials with low dose IL-2, the Treg compartment was strengthened in autoimmune diseases. Therefore, we tested complexed IL-2/anti-IL-2 to increase the selectivity for Tregs. We used our model of Experimental Murine AIH (emAIH) and treated the mice with complexed IL-2/anti-Il-2 in the late course of the disease. The mice showed increased intrahepatic and systemic Treg numbers after treatment and a reduction in activated, intrahepatic effector T cells (Teffs). This resulted in a reduction in liver-specific ALT levels and a molecular pattern similar to that of healthy individuals. In conclusion, complexed IL-2/anti-IL-2 restored the balance between Tregs and Teffs within the liver, thereby improving the course of emAIH. Treg-specific IL-2 augmentation offers new hope for reestablishing immune tolerance in patients with AIH.

Audience Take Away:

- The role of regulatory T cells in autoimmunity.
- The advantage of complexed IL-2 in strengthening Tregs in AIH.
- How IL-2 restores regeneration in the liver by reestablishing immune tolerance.

Biography:

Research group leader in the Department of Gastroenterology, Hepatology and Endocrinology at Hannover Medical School since 2020.Research group leader in the Department of Gastroenterology and Hepatology at University Medicine Essen from 2018-2020.

Comparison between virulent genes-based and serotype-Based vaccine for uropathogenic escherichia coli

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[2]Faculty of Agriculture, Suez Canal University, Ismailia, Egypt

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[4]Faculty of Veterinary Medicine, Suez Canal University, Ismailia, Egypt

[5]Veterinary Serum and Vaccine Research Institute Abbasia-Cairo, Egypt

Urinary Tract Infections (UTIs) are one of the most common bacterial infections with global expansion particularly in Egypt. These infections are predominantly caused by Uropathogenic Escherichia coli (UPEC). In a trial to prevent these infection we proposed this study in which monovalent verses polyvalent vaccines were evaluated after the presence of specific bacterial genes that encode virulence factors was determined. The virulent genes explored include ibeA, pap, sfa/foc, cnf1, hly, fyuA, pil, ompT and traT. Mice were vaccinated with whole cell or cell free formaline-Killed selected strain of E.coli (O78 serotype) as monovlanent vaccine. The polyvalent one was a combination of three other selected strains, serotype O78, O114 and O164, each has different virulent genes content. Testing the efficiency of vacines with and without adjuvant was also considered. We assessed the efficacy of vaccination using ten mouse for each treatment. Depending on data obtained the vaccine preparation with a high immune response that gave high protective index and elevated antibody level, was the polyvalent whole cell formalin-killed vaccine combined with adjuvant. This finding suggests that this polyvalent vaccine may has utility in preventing UTIs in humans regardless of the virulent gene content of the strain causes infection.

Audience Take Away:

- This paper benefit all vaccine developers.
- Immunologists and vaccinologists also need it.
- Microbiologists of medical interest are involved by paper results.
- The old methods still good for vaccine strains selection.
- The paper focus on the serology- based selection is better than Molecular one.

Biography:

Dr. Jamil M.A.S. Obaid is an Assistant professor of immunology and immunohematology, Head of Medical laboratory Sciences department at the Faculty of Medicine and Health Sciences, Ibb University since 2016. He is lecturer at the Medical Microbiology department at the Faculty of Science and many private universities for medical and health sciences students in the field of immunology, immunohematology, hematology, vaccinology and Clinical Laboratory sciences. He is lecturer for Master degree students, examiner and supervise for two students. He have 11 research articles and many studies under publication.

Robust antibody-mediated protection against SARS-COV-2 induced by NVX-COV2373 subunit vaccine adjuvanted with matrix-M

Alex L. Zhu*[1,3], Matthew J. Gorman[1], Nita Patel[2], Mimi Guebre-Xabier[2], Caroline Atyeo[1], Krista M. Pullen[4], Carolin Loos[1,4], Yenny Goez-Gazi[5], Ricardo Carrion Jr[5], Jing-Hui Tian[2], Dansu Yuan[1], Kathryn A. Bowman[1], Bin Zhou[2], Sonia Maciejewski[2], Marisa E. McGrath[6], James Logue[6], Matthew B. Frieman[6], David Montefiori[7], Colin Mann[8], Sharon Schendel[8], Fatima Amanat[9], Florian Krammer[9,10], Erica Ollmann Saphire[8], Douglas A. Lauffenburger[4], Ann M. Greene[2], Alyse D. Portnoff[2], Michael J. Massare[2], Larry Ellingsworth[2], Gregory Glenn[2], Gale Smith[2], and Galit Alter[1]

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Recently approved vaccines have shown remarkable efficacy in limiting SARS-CoV-2-associated disease. However, with the variety of vaccines, immunization strategies, and waning antibody titers, defining the correlates of immunity across a spectrum of antibody titers is urgently required. Thus, we profiled the humoral immune response in a cohort of non-human primates immunized with an adjuvanted recombinant SARS-CoV-2 spike glycoprotein (NVX-CoV2373) at two doses, administered as a single- or two-dose regimen. Both antigen dose and boosting significantly altered neutralization titers and Fc-effector profiles, driving unique vaccine-induced antibody fingerprints. Combined differences in antibody effector functions and neutralization were associated with distinct levels of protection in the upper and lower respiratory tract. Moreover, NVX-CoV2373 elicited antibodies that functionally targeted emerging SARS-CoV-2 variants. Collectively, the data presented here suggest that a single dose may prevent disease via combined Fc/Fab functions but that two doses may be essential to block further transmission of SARS-CoV-2 and emerging variants.

Audience Take Away:

- The FDA Emergency Use Authorized NVX-CoV2373 subunit vaccine elicits neutralizing and Fc-effector functional antibodies.
- The NVX-CoV2373 vaccine protects against upper and lower respiratory tract infection in non-human primates by eliciting neutralizing antibodies and Fc-mediated effector functions.
- Vaccine-induced antibody responses in humans exhibit altered Fc-receptor binding to SARS-CoV-2 variants.
- Listeners will gain an understanding of a suite of assays developed for the quantification of antibody Fc-mediated recruitment of innate immune functions.

Biography:

Alex has a background in immunology and works on prophylactic vaccines aimed towards minimizing the global toll of infectious diseases. He is particularly focused on viruses with pandemic potential and shifted his work towards SARS-CoV-2 during the pandemic. He is interested in exploring the utilization of adjuvants to further enhance the immunogenicity and efficacy of vaccines.

KEYNOTE FORUM

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Vincenzo Alfano*[1], Salvatore Ercolano[2]

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Your vaccine attitude determines your altitude what are the determinants of attitude toward vaccination?

Attitude toward vaccination is doubtless an important determinant of public health, and this become evident during a pandemic. The issue, periodically debated within European societies since some years, especially with respect to occasional surge of diseases in given years and seasons, become a crucial parameter in determine the wellbeing of a country since 2021. In this work, using microdata from an Eurobarometer survey from 2019, we frame and deepen our knowledge about the main determinants of vaccination attitude as pointed out by the related literature. In more details, positive attitude toward vaccination may be due to individualistic or altruistic reasons, different incentives that can improve our knowledge about the determinants of such a complex decision. Our findings, by the means of a quantitative analysis that employs Ordered Probit, Ordered Logit and Generalized Ordered Logit estimations, provide complete support to some of the theories debated in the literature, limited support because of mixed evidences to others, and no support for some.

Audience Take Away:

- A survey of main determinants of vaccine attitude.
- A test of their impact on vaccine attitude in Europe.
- A summary of confirmed and not supported literature claims in our sample.

Biography:

Dr. Vincenzo Alfano holds the position of Assistant Professor in Applied Economics at University of Messina. He is also associate to Institute for the Mediterranean of the Italian National Research Council, to the Center for Economic Studies – CESifo, and is research fellow for Global Labour Organization – GLO. Moreover, he serves as a board member of several scientific journals, and is the Managing Editor of Evaluation and Program Planning. Before being appointed to this position. Dr. Alfano worked as Senior Lecturer in Economics at Westminster International University in Tashkent, and was the Economic Adviser for the Italian Minister of University and Research. Dr. Alfano has broad research interests, going from health economics and public health to the economic impact of religion. He has published in several top scientific journals, including Applied Health Economics and Health policy; Journal of Sports Economics; The B.E. Journal of Economic Analysis and Policy; and Political Studies Review.

Sudhakar Bangera

MBBS, MD, MMedSc, Fellow-Vaccinology Managing Partner AILEEN Clinical Research Services AILEEN, India

The need for separate regulations for prophylactic vaccines

Biological therapeutics, also referred to as Biologicals, are those diverse group of medicines that are grown and then purified from large-scale cell cultures of bacteria or yeast, or plant or animal cells. Biologicals include a wide range of products such as vaccines, allergenics, somatic cells, gene therapy, tissues, growth hormones, interleukins, immune modulators, growth factors, monoclonal antibodies, recombinant therapeutic proteins, blood and products derived from human blood and plasma. What distinguishes biologicals from other medicines is that these are generally large, complex molecules and can be composed of sugars, proteins, or nucleic acids or complex combinations of these substances, or may be living entities such as cells and tissues, whereas other medicines are considered as 'small molecules' and are either made synthetically or purified from plants.

Biologicals, including prophylactic vaccines, cell and gene therapy, and pharmaceuticals are all subject to the same regulations in terms of research and development, manufacture, pre-clinical and clinical studies, marketing authorisation, and post-licensing usage surveillance and monitoring. Designing a clinical trial for prophylactic vaccine is a challenge starting from validation process, selecting appropriate biomarkers, target population, defining inclusion criteria, laboratory investigations, out come measures in terms of antibody titres in a defined time period. These complexities make prophylactic vaccine stand apart from a pharmaceutical product.

The implementation of a strong regulatory system is critical for vaccines because they are inherently more difficult to develop, characterize, and manufacture than most drugs or biologicals. The regulatory documents for an intended prophylactic vaccine needs to be reviewed by a separate, trained and experienced agency, rather than by the central licencing agency that deals with pharmaceutical products, a process being followed in few advanced countries. Technical committees appointed by the regulatory agency has to include experienced immunologists in the panel. To keep in pace with the regulatory agency, Institutional Ethics Committees, scientific review boards must have expert immunologists, microbiologists and public health personnel in their team for comprehensive review. Hence, in view of their peculiarities and important differences, vaccines should be regulated differently and separately.

Audience Take Away:

- Peculiarities and important differences between drugs/ biologicals and vaccines.
- Regulatory, scientific oversight and public oversight are not same, as they should be for vaccine.

Biography:

Dr. Sudhakar Bangera did his MBBS from KIMS, Bangalore; MD (Pharmacology) from KMC Mangalore; and MMedSc (Clinical Trials Methodology) from The University of Hong Kong. Dr. Bangera is also trained on India Vaccinology Course with CMC Vellore, and funded by Bill & Melinda Gates Foundation for International Vaccinology at IVI, Seoul. He has extensive work experience of 30 years in healthcare, of which 25 years are in global and local CRO, ARO, SMO, Medical Imaging, Clinical Bioavailability and Bioequivalence, Public Health, and Pharmaceutical and Vaccine manufacturing companies in various capacities as COO, Country Manager, Vice-President, Director, Project Manager in national and international organisations.

Dr. Bangera has worked on 300+ full scope BA-BE and phase 1 to 4 clinical trials for new pharmaceuticals, vaccines, medical devices, biologicals and cosmetics, while setting up CROs and departments as the first employee. He has been a speaker on several topics in the clinical research domain in more than 150 invited talks. He was responsible for phase 1 clinical trials of Chkiungunya, Zika and other vaccine in later phases.Currently, Dr. Bangera is managing his consulting firm, AILEEN Clinical Research Services as Managing Partner at Hyderabad, and a medical technology translation advisor to students, faculty and healthcare startup entrepreneurs at several bioincubators, and internationally on clinical development and regulatory requirements.Dr. Bangera is an author of two books – Medical Device – Concept to Commercialisation: India Perspective, and The CRA.

Rosane Cuber Guimaraes*[1], Debora Michele Morone DAiuto[2], Priscila Ramos Coimbra Martins[3]

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[3]COVID-19 Vaccine Tech Transfer Project, Bio-Manguinhos/Fiocruz, Rio de Janeiro, Brazil

Analytical transfer of COVID-19 recombinant vaccine between fiocruz and astrazeneca

Since the beginning of Sars-CoV-2 virus pandemic in Brazil on March 2020, Fiocruz has been part of various national and international fronts for the search and production of a vaccine against COVID-19. With a long history and a tradition of more than 70 years in vaccines production, Fiocruz signed an agreement with the biopharmaceutical AstraZeneca to produce in Brazil the vaccine against the new coronavirus, an immunizing agent developed by University of Oxford. A huge Project was established in Bio-Manguinhos/Fiocruz in order to execute all the steps needed to deliver the vaccine to Brazilian government. One of the work fronts was linked to Technology Transfer, considering DP & DS Production Transfer and DP & DS Analytical transfer. This paper aims to demonstrate how the analytical transfer of COVID-19 Recombinant Vaccine between Fiocruz and AstraZeneca was essential for the complete transfer of COVID-19 vaccine production in Brazil. A process flow modelling using Bizagi Modeler was performed to demonstrate the main steps of COVID-19 Vaccine Analytical Transfer, as well describe each step and documents generated. With this process design, it was possible to comprehend difficulty, lessons learned and accelerators of the transfer that allowed it to be made in a short time and successfully concluded. Comparing COVID-19 analytical tech transfer with other transfers already performed by the Institute, it was possible to verify the main differences between them and all the lessons learned to be used for the future projects.
Some of the enablers of this project:
a) As Bio-Manguinhos is a worldwide product of viral vaccines, there was already prior knowledge in the methodologies and platforms used.
b) The Institute already had a transversal management of innovation project activities and the portfolio of existing products, and
c) A Quality Management System that already covered all the necessary documentation structure to speed up the transfer process.

As it was a project performed in a shortest time, some difficulties were faced by Quality Control team during all the projects. Most of the equipment and consumables came from outside the country, and all the logistic to receive them are very complex and bureaucratic. So, some items took a long time to arrive, affecting some deadlines previously agreed with the partner. Another difficult was related to the trainings: Due to the pandemic and the impossibility of travels, there was an impossibility of face-to-face training. AstraZeneca sent videos of the methods, and then Bio-Manguinhos' QC team performed the analytical transfer based on them. And a last difficult that can be emphasized, is the one related to the difficult to hire new employees with specialized knowledge in a short period of time. It was a race against time because everything needed to be ready in QC to test Drug Product and Drug Substance from Process Perfomance Qualification (PPQ) Lots. The main goal of this project was the licensing of Drug product in 8 months and the licensing of nationalized Drug substance in 11 months. Now, Fiocruz can distribute nationalized vaccine to Brazilian Ministry of Healthy.

Audience Take Away:

- This work contributes to the knowledge of all the procedures to be performed to have a successful analytical transfer, using as a basis what was done during COVID-19 Recombinant Vaccine Tech Transfer Project, a partnership between Fiocruz and AstraZeneca. This transfer lasted approximately 12 months: 6 months to transfer all the methods for the final product phase and 6 months for the absorption of all the methods performed to release COVID-19 Active Pharmaceutical Ingredient, considering compendial and non-compendial methods and the related complexities.

- This work will help the audience that works with Analytical Transfer Programs, and will show them how to perform an Analytical Transfer with a high degree of effectiveness and efficiency based on acquired experiences during COVID-19 Recombinant Vaccine Tech Transfer Project between Fiocruz and AstraZeneca, so that they can accelerate the projects they work in.
- This research can be used to expand the teaching related to analytical transfer model adopted by Tech Transfer Projects, since this work presents enablers for accelerating the transfer.
- Optimized analytical transfer mapping methodology increasing accuracy and adopting it as a standard to increase absorption of new products in the portfolio.

Biography:

Dr. Rosane Cuber studied biomedicine at Rio de Janeiro State University, Brazil and has specialization in molecular biology from the University of Brasilia and master in biochemistry at Federal University of Rio de Janeiro. She received her PhD degree in sanitary surveillance at the National Institute of Quality Control in health (INCQS/Fiocruz)). In Bio-Manguinhos since 2000, has experience in the area of collective health, with emphasis on public health, acting mainly in the following themes quality, development of viral vaccines, regulation and biosecurity. She is currently the Deputy Director of quality of Bio-Manguinhos/Fiocruz.

SPEAKERS

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Global COVID-19 vaccine policies – A literature review

Deborah Hilton
Deborah Hilton Statistics Melbourne, Vic, Australia

Background: The research rationale is that many economic, policy, and government implications result from the COVID-19 pandemic. Hilton published a literature review on COVID-19 research specific to Australia including policy and media releases. This Australian scientific literature assessed the social impact, government, and policy implications. This presentation expands on previous research by assessing the quantity of literature and topics identified in the scientific literature that relate to global vaccine policies.

Methods: A search strategy was created using the MeSH Browser. The MeSH (Medical Subject Headings) is the NLM controlled vocabulary thesaurus used for indexing articles for PubMed and is at; The search strategy created was;("SARS-CoV-2"[Mesh])) OR "Coronavirus"[Mesh]) OR "COVID-19"[Mesh]) AND "Vaccines"[Mesh]) AND "Policy"[Mesh].

Results: The search retrieved 236 results of which 97 were in the last year. 16 results were reviews, and 2 were randomized controlled trials. 107 retrievals had no abstract available. 3 abstracts were in Spanish. Of the 16 reviews, there were a range of varied, and important topics for consideration. One manuscript reviewed the policy dynamics of COVID-19 vaccination in Ghana while another focused on vaccination policies based upon scientific evidence in Japan. One other review focused upon the Medical Liability of the Vaccinating Doctor: Comparing Policies in European Union while another reviewed general vaccination ethics. A further review, looked at the comparative analysis of COVID-19 vaccination certificates in 12 countries, while another reviewed the unintended consequences of COVID-19 vaccine policy. Another topic dealt with the Role of Serology Testing and Vaccine market access pathways in the EU27 and the United Kingdom. Various other topics that were not country-specific included vaccine effects on women and the immune response. The two randomized controlled trials were both published in 2022. One reported on the Effect of Text Message Reminders and Vaccine Reservations on Adherence to a Health System COVID-19 Vaccination Policy. The other was on the topic of How to boost the boosters? A survey-experiment on the effectiveness of different policies aimed at enhancing acceptance of a "Seasonal" vaccination against COVID-19.

Conclusion: The above review results which were summarized show the important medical and scientific considerations that are associated with vaccination and policy. Some of this scientific evidence is in regards to effectiveness. Other important issues such as medical liability and ethics, documentation and certification, markets, reminders, and how to increase uptake were also discussed in these reviews. This presentation will highlight the important policy implications regarding COVID-19 vaccines across various different countries.

Audience Take Away:

- What background information is available in terms of publications on COVID in relation to vaccine policy within Australia.
- How to systematically search for high-quality evidence on the topic of COVID-19 vaccines using the Pubmed MeSH terms.
- How to apply filters to select article types, year of publication, and language.
- To understand the range of topics that the reviews retrieved deal with in terms of global COVID-19 vaccine policy.
- To be able to identify what issues are of importance for the delegates in terms of what country they may reside in.

Biography:

She has a B Phty- (UQ) [1987] & a MPH - Qld [2000]. The dissertation analyzed the Australian Diabetes Screening Study and was published in the Medical Journal of Australia. Her research gate profile is listing 29 research items, read over 1500 times with 250 citations. She is a member of the PHAA, the ASMR & have not practising Victorian Physiotherapy Registration. She have published 25 peer-reviewed manuscripts, 7 non-peer-reviewed manuscripts. She have one manuscript acknowledgment, 1 book acknowledgment, 18 short articles published, 34 poster presentations, and 18 paper conference presentations.

IGG and IGM antibody markers for immune monitoring in therapeutic cancer vaccine

Yusuke Oji
Department of Clinical Laboratory and Biomedical Sciences, Osaka University Graduate School of Medicine, Osaka, Japan

The *WT1* gene is an oncogene overexpressed in leukemia and various types of solid cancers. WT1 gene product is highly immunogenic and a promising target for cancer immunotherapy. We have developed a WT1 peptide-based therapeutic cancer vaccine and shown its clinical potential in clinical trials for various cancers. Therapeutic cancer vaccine induces tumor-associated antigen-specific immune responses to control tumors. One primary goal of immune monitoring is the detection of the induction of anti-tumor immune responses against target antigens after the start of vaccination. We have shown that IgG antibody production against vaccinated WT1 peptide is correlated with a favorable prognosis. This favorable prognostic correlation could be explained by the CD4 T-cell activity that is detected by the IgG production, where the class switch from IgM to IgG requires the help of CD4 T cells. Recently, we found the production of IgM antibodies against WT1 peptide before vaccination. Since the production of IgM antibodies does not require the help of CD4 T cells, WT1 peptide IgM antibodies could be correlated with anti- or pro-tumor immune responses of B cells. This presentation focuses on IgG and IgM antibody markers as immune monitoring tools in therapeutic cancer vaccines.

Biography:
Yusuke Oji from Osaka University Graduate School of Medicine, Japan.

The potential application of recombinant swinepox virus expressing protective antigens of ASFV

Huixing Lin*[1], Lin Ji[1], Yawen Xu[1], Gao Lu[1], Ambreen Leghari[2], Xisha Lin[3]

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African Swine Fever (ASF) is caused by African Swine Fever Virus (ASFV). The mortality rate of domestic pigs and wild boars is as high as 100%, and they can also infect pigs and ticks as carriers and infection hosts. So far there is no commercialized ASF vaccine. The prevention and control of ASF only relies on biosecurity, which is costly. Therefore, it is imperative to develop an effective vaccine for the prevention and control of ASFV. As a vaccine vector, Swinepox virus (SPV) has strict host specificity and good safety. In this study, the recombinant SPV vaccine expressing ASFV protective antigen p72 and truncated p54 was constructed. The expression of the inserted gene fragments were identified by IFA and Western Blot. The titer of recombinant virus was determined by calculating the copy number. The results of animal experiment showed that the level of the p72-specific antibody and the p54-specific antibody of the rSPV-p72-p54 vaccinated piglets were significantly higher at all time points post-vaccination than those of the subunit vaccine of ASFV vaccinated piglets ($P < 0.05$), wtSPV ($P < 0.001$) or mock treated piglets ($P < 0.001$). The IL-4 and IFN-γ in the rSPV-p72-p54 group were significantly higher than the other three groups at all post-infection time points. These results suggest the possibility of using recombinant swinepox virus rSPV-p72-p54 as a promising vaccine to prevent ASFV infection.

Audience Take Away:

- The Recombinant Swinepox Virus (rSPV) is a potential vaccine vector.
- Multiple exogenous protective antigens can be expressed simultaneously in rSPV vector vaccine.
- The rSPV vector vaccines elicit potent Th1-type and Th2-type cytokine responses in animals.

Biography:

Dr. Huixing Lin studied Preventive Veterinary Medicine at College of Veterinary Medicine, Nanjing Agricultural University. He received his PhD degree in 2014 at the same institution. Now he is a master's supervisor at College of Veterinary Medicine, Nanjing Agricultural University. He has published more than 30 research articles in SCI(E) journals.

COVID-19 & mucormycosis

Amarjeet Gambhir
Faculty, Department of Dental & Oral Surgery, Lady Hardinge Medical College & Hospital, New Delhi, India

The outbreak of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory system coronavirus 2 (SARS-CoV-2) was first reported in Wuhan, China and has been sweeping across the globe. It has been associated with a wide range of opportunistic bacterial and fungal infections. COVID-19 likely increases the risk for fungal infections because of its effect on the immune system and because treatments for COVID-19 (like steroids and other drugs) can weaken the body's defenses against fungi. COVID-19-associated fungal infections can lead to severe illness and death. The most commonly reported fungal infections in patients with COVID-19 include aspergillosis, invasive candidiasis, and mucormycosis. COVID-19-associated mucormycosis became a major public health problem particularly in India. It is postulated that COVID-19 associated mucormycosis (CAM) is driven by complex host-microbe interactions. Mucormycosis, erroneously referred to as "black fungus", is a rapidly progressive and potentially lethal, angioinvasive fungal infection caused by Mucorales species. The ubiquitous mold usually gains entry into the host through the respiratory tract. Alternatively, organisms may enter the body through cuts or burns in the skin or may become disseminated via bloodstream infection.

COVID-19 associated mucormycosis may affect the lungs (pulmonary mucormycosis) but nose and sinuses are the most frequent infection sites causing symptoms such as nasal blockage and discharge, unilateral facial swelling, pain and/or redness around eyes or nose and black necrotic lesions. It can then spread to the eyes, causing blindness, or to the brain, causing headaches and seizures (rhino-orbito-cerebral mucormycosis). Diagnosis is usually made by clinical findings supported by diagnostic nasal endoscopy or contrast-enhanced MRI or CT scan coupled with microbiological confirmation on direct microscopy, culture or histopathology. Suspected mucormycosis requires urgent intervention as delayed initiation of therapy is associated with increased mortality. The global guidelines of European Confederation of Medical Mycology (ECMM) and the Mycoses Study Group Education and Research Consortium (MSG ERC) strongly support an early complete surgical treatment for mucormycosis whenever possible, in addition to systemic antifungal treatment. Liposomal Amphotericin B, Amphotericin B lipid complex, and posaconazole oral suspension are treated as the first-line antifungal monotherapy, while isavuconazole is strongly supported as salvage treatment. Prognosis remains poor even with aggressive therapy with reported mortality rates of 33.3-80 per cent. Hence, it becomes extremely important in COVID-19 setting to optimize the indications for systemic steroids, ensure judicious use of tocilizumab, monitor blood glucose levels & minimize the patient exposure to potential sources of infection to possibly reduce the incidence of this lethal fungal infection.

Audience Take Away:

- The presentation will provide an insight into the various aspects of COVID-19 and mucormycosis syndemic including.
- Causes/predisposing factors.
- Pathophysiology, clinical presentation & staging of Rhino-Orbito-Cerebral Mucormycosis (ROCM).
- Global guidelines for diagnosis & management of mucormycosis.
- Prevention of ROCM in COVID-19 setting.

Biography:

Dr. Amarjeet Gambhir graduated in dentistry from GDC, Indore in 2002 & completed his post-graduation in Oral & Maxillofacial Surgery from NHDC, Mumbai in 2006. He completed his Senior residency from Lady Hardinge Medical College & Hospital, New Delhi in 2009. He worked as a faculty at different dental colleges and was promoted to Professor, Oral & Maxillofacial Surgery in 2016. He again joined Lady Hardinge Medical College as a Faculty in 2016. He is the co-investigator for "O-PMD Hub", A National Resource Centre for Oral Potentially Malignant Disorders under the National Oral Health Program, MoHFW, Government of India.

He has worked as a co-investigator in pilot project on School-based Sealant Program, 2017 under MoHFW, Government of India. He is a reviewer of various international journals & has published more than 16 national & international papers in peer-reviewed indexed journals. He has attended numerous conferences & workshops and presented a number of papers & key-note lectures in national & international conferences/webinars. He has also authored 3 books for dental postgraduate entrance examinations. His areas of interest include oral cancer, TMJ disorders, maxillofacial pathology & reconstruction, maxillofacial trauma & dental implants.

PD-1/PD-L1 interaction is a predictive biomarker to stratify NSCLC lung cancer patients to immunotherapy

Lissete Sanchez Magraner
Hawk Biosystems, Spain

Non–Small Cell Lung Carcinoma (NSCLC) is known to evade host immune defenses via a down regulation of the immune response. One of the molecules involved in this mechanism is programmed cell death ligand 1 (PD-L1), which interacts with its receptor, programmed cell death protein 1 (PD-1), expressed on T-cells, leading to a reduction in cytokine release and cytotoxic activity, as well as a halt in T-cell proliferation. Approved therapeutic monoclonal antibodies which target PD-1/PD-L1 interactions are revolutionizing cancer treatments, however a significant subset of patients does not benefit from these expensive treatments. PD-L1 expression determined by immunohistochemistry (IHC) on tumor tissue is the clinically validated predictive biomarker. Nevertheless, only evaluating PD-L1 expression cannot accurately ensure correct patient selection for treatment, due to survival benefits being observed in anti-PD-1/PD-L1 treated patients regardless of their PD-L1 expression. To address this issue we have developed QF-Pro, a novel antibody-based imaging assay utilizing amplified Forster Resonance Energy Transfer (FRET) for the quantification of PD-1/PD-L1 interactions in NSCLC tissue samples (FFPE). The analysis across a cohort of 135 patients demonstrated the intra- and inter-tumoral heterogeneity of the interacting PD-1/PD-L1 immune checkpoint and notably showed the correlation between PD-1/PD-L1 interaction levels and patients' overall survival (OS).

Biography:

Dr. Sanchez-Magraner obtained her BSc degree in Biochemistry from the University of La Habana, Cuba. She later moved to Spain, where she obtained her PhD. in Biochemistry and Molecular Biology from the University of the Basque Country and then went as a visiting scientist to University of Verona, Italy. She has received several post-doctoral contracts from different institutions such as Spanish National Research Council (CSIC), The University of the Basque Country and the Basque Government (Spain). Her work has been dedicated to protein biophysics and biomarkers development for oncology and it has contributed to clarify the role of different domains of certain proteins with regards to their structure and function. Since 2017, Lissete has been the Senior Scientist and Project Manager at FASTBASE Solutions where she has focused on the development of new biomarkers and assays for immuno-oncology.

Factors predicting poor outcomes of patients treated with tocilizumab for COVID-19 pneumonia: A retrospective study

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The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic is a significant global issue that has major implications for the healthcare system. Mortality rates of SARS-CoV-2 infection vary by geographic region and are associated with age, comorbidities, and vaccination status. Organ damage is caused by the cytokine release syndrome, which is important in the course of coronavirus disease-19 (COVID-19) patients. Innate and adaptive immune system stimulation in COVID-19 patients results in inappropriate cytokine release. Anti-IL-6 receptor antagonist tocilizumab is used to treat connective tissue diseases. In this single-center retrospective study of COVID-19 patients admitted between September 2020 and April 2022, we aimed to identify predictors of mortality and other unfavorable outcomes in patients treated with tocilizumab for COVID-19 pneumonia. Demographics, vaccination status against SARS-CoV-2, Charlson comorbidity index (CCI), laboratory data, and chest X-ray score were recorded on admission.

In total, 174 subjects (121 males, mean age 62.43±13.47 years) fulfilling the inclusion criteria were identified. Among the 174 participants, 58 (33.3%) were intubated. The mortality rate was 35.1%. Non-survivors were older, mostly females, and had a higher CCI score. At the evaluation on admission, survivors presented with higher levels of Alanine Tranferase (ALT) and gamma glutamyl-transferase (GGT) and with a greater number of platelets (PLTs), while patients that were intubated were also older, mostly females, and had a higher CCI score ($p<0.05$). Age was identified as the only independent factor predicting mortality in the Cox proportional hazards multivariate regression analysis. By performing a sub-analysis regarding gender, we revealed that the value of PLTs was an independent factor predicting intubation and 90-day mortality in male patients, and the lymphocyte count was the only factor associated with intubation in female patients. This data could be used to to identify patient subpopulations responding to treatment with tocilizumab in prospective clinical trials.

Audience Take Away:

- This presentation reveals factors associated with mortality in patients treated with tocilizuma for COVID-19.
- Moreover, a separate sub-analysis regarding gender underlines the significant effect of dender in these patients.
- This data could be used to to identify patient subpopulations responding to treatment with tocilizumab in prospective clinical trials.

Biography:

Dr. Vasiliki E.Georgakopoulou studied Medicine at the National and Kapodistrian University of Athens, Greece and graduated as MD in 2011. She then had her specialization in Respiratory Medicine at Sismanogleio Hospital, Greece. She received her Msc degree in 2022 at the Democritus University of Thrace. She is a Respiratory PhysIVCn at Laiko Gneral Hospital, Greece and co-ordinator of Respiratory Infection Group at Hellenic Thoracic Society. She has published more than 70 research articles in peer-reviewed journals.

Strategic efforts towards development of a cell culture attenuated duck plague vaccine using an Indian virulent field isolate

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Duck farming occupies an important position next to chicken farming in the Asian continent. Among various diseases affecting the duck populations, duck plague (DP) or duck viral enteritis, caused by *Anatid herpesvirus-1*, is the most significant contagious viral disease reported worldwide very frequently, causing huge economic losses due to high morbidity and mortality. The main strategy for combating this disease is through vaccination. In India, presently a live attenuated chicken egg adapted DP vaccine, originally imported from Netherlands, is being used for prevention of DP since more than five decades. The present process of vaccine preparation by propagating the vaccine virus in developing chicken eggs appears to be very cumbersome along with other limitations. Therefore, we have attempted to develop a cell culture-based indigenous vaccine. In this process, an Indian virulent strain of duck enteritis virus (DEV/India/IVRI-2016) was isolated from the field samples and was fully characterized including the complete genome sequence.

The virus was first propagated in developing duck eggs, then in duck embryo fibroblast (DEF) cell culture and finally adapted in chicken embryo fibroblast (CEF). The vaccine candidate (DPvac/IVRI-19) was developed by attenuation of the DEV isolate through serial propagation in primary CEF cell culture and the titre of the vaccine virus was $10^{7.5}$ $TCID_{50}$/ml. The vaccine was tested for safety and potency as per OIE and Indian Pharmacopeia (IP-2018) guidelines and it was found to be completely safe and afforded 100% protection against challenge infection with the virulent DEV. Comparative analysis of the complete genome sequence of this vaccine strain) with the virulent field isolate revealed nucleotide mutations in various genes, which might have resulted in attenuation of the virus. As compared to the existing chicken egg adapted commercial DP vaccine available in India, the newly developed cell culture vaccine is precisely in pure form and amenable for large scale production with uniform titre from batch to batch. Further, considering the fact that continuous or established cell lines have the ability to grow indefinitely and easier to maintain, presently we are trying to adapt the vaccine candidate (DPvac/IVRI-19) in established cell lines such as DF1 (CEF origin) and Vero cells for further making the ease of industrial scale production.

Audience Take Away:

- We are demonstrating the strategical approach for development of a cell culture attenuated duck plague vaccine from a local field isolate for effective control of the disease. The audience may be benefitted from this talk to implement similar approach to develop vaccines as per necessity.
- In this presentation, we shall be describing the process of isolation of the wild strain of duck plague virus from the field samples collected during outbreak, characterization of the field isolate, adaptation of the virus in homologous host/ cell culture system and then in heterologous cell culture followed by serial propagations to achieve attenuation of the virus to develop a vaccine candidate. The audience may learn about the detailed protocol for vaccine development by attenuation of a field strain through cell culture method and can implement in their research.
- We shall be talking about the complete genome analysis, in which we found mutation in certain genes, which indicate their possible role in attenuation of the virus or virulence of the organism. Further studies may open the door for newer generation technologies for vaccine development including DIVA strategies.

- Certainly, this cell culture vaccine has advantages over the existing duck plague vaccine presently being used in India and may be in many other countries, which is prepared by propagation of the vaccine strain in developing chicken eggs. Since, our new vaccine candidate is prepared from a local strain; it may be more effective against the presently circulating field strain eliciting long lasting robust protective immunity. By using cell culture system, apart from ease of production we can obtain the vaccine virus in precisely pure form ascertaining the uniform titre from batch to batch. Further, we are also working on adaptation of this vaccine strain in established cell line, which will further make ease of commercial production.

Biography:

Dr. S. Dandapat graduated in Veterinary Science (B.V.Sc. & A.H.) from OUAT, Bhubaneswar, India in 1985, completed his Master's degree (M.V.Sc) in 1989 and Ph.D in 2000 with specialization in Veterinary Immunology at the Deemed University, ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar (U.P.), India. He has undergone training on "Production and quality control of oral polio vaccine" at the Institute of Poliomyelitis at Moscow (sponsored by Govt. of India) during 1990. He joined as Scientist (Agricultural Research Service) under ICAR, Govt. of India in 1993 and by now he has experience of teaching for last 22 years and guided 9 Ph.D and 6 M.V.Sc students. He has research experience of around 28 years and handled many projects as the project leader in the area of microparticle and nanoparticle vaccine delivery systems, immunomodulation, vaccine development etc. Presently he is working as Principal Scientist and Head of Immunology Section, ICAR-IVRI. His present research focus is on duck plague vaccine development. He is recipient of 'Best Teacher Award' and many other awards for his research contribution and he is the life member of eight scientific societies in India.

New technologies in shrimp and other crustacean vaccines

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[3]Department of Microbiology, Jahrom Branch, Islamic Azad University, Jahrom, Iran

Researchers are looking for pathogens of shrimp without pathogens or SPF and shrimp tolerant to viral agents that are not pathogenic to humans and can only be pathogenic to shrimp and crustaceans. In 1998, a scientist stated that shrimp and insects could retain viruses for long periods of time without any adverse effects, proving that shrimp had not antibodies. Other research has shown that shrimp and insects can use DNA and RNA instead of antibodies to defend against viral pathogens. French scientists and researchers in the United States conducted research from 2013 to 2020 to prove that shrimp and insects copy viral RNA fragments into DNA and then insert DNA copies into their genomes. Finally, they block the translation into protein. A very surprising result on insects in France showed that fragments in viral RNA copied were seen in both linear and circular shapes, with very stable circular DNA, and the researchers showed that this DNA, which is Called CDVNA, it has the potential to be used as a viral vaccine in shrimp. Researchers are looking for ways to use antibiotics in aquaculture instead of boosting the immune system of invertebrates such as shrimp, especially with compatible safety.

One of these measures is the development of a vaccine against shingles in shrimp. It is estimated that the Asian shrimp industry alone experienced an annual loss of 4 billion due to shrimp disease from 2009 to 2018. In one study, Dscam isoforms were detected in vaccinated and unvaccinated shrimp homocytes. Further analysis showed that LvDscam Ig_2 and Ig_3 regions are functionally important in shrimp-specific immune response against WSSV because it helps to identify specific pathogens. According to researchers on shrimp immunology, controlling vibriosis by vaccination is a promising option in the aquaculture industry. Therefore, researchers have used Vibrio pathogen-derived materials or whole inactivated Vibrio cells to stimulate the shrimp's immune system against Vibrio by focusing on the two commercial species P. vannamei and P. monodon. Various ways of vaccinating shrimp have been tried, one of which is oral administration through nutrition. It has also been done by injection into the cephalothorax, intramuscular injection and by immersion. Of course, the types of vaccinations are different. Formalin-killed, heat-killed, heat and formalin-killed, Vibrio bacterial cells isolated from biofilm, outer membrane protein, and lipopolysaccharide are used in vaccines against vibriosis in shrimps. Of course, maintaining proper hygiene practices regarding the use of safety stimulants may be a good approach to maintaining shrimp aquaculture worldwide.

Audience Take Away:

- New technology of Shrimp vaccines would be considered and more explained.
- Importance of Vaccine role in Control and Prevention of Infectious diseases in Shrimp would be negotiated.
- Design of new vaccines and decreased of antibiotic resistance would be noticed.

Biography:

Dr. Laleh Yazdanpanah Goharrizi started her university education in 1991 at the undergraduate level and in 2003, she received his master's degree. She also graduated with a doctorate in 2019 and received her degree from one of the prestigious Iranian universities in Kerman. She started working in the Fisheries Research Department at the Agricultural Research and Training Center in 1995. She became a member of the faculty in 2003. She currently has 26 years of research experience and has several books, 140 conference papers, and lots numberof articles ISI and scientific research and extension papers, and is currently an assistant professor at the Fisheries Science Research Institute.

Characterization of attenuated genotype 1 strain of Japanese encephalitis virus

Muhammad Naveed Anwar
Chinese Academy of Agricultural Sciences, Pakistan

Japanese Encephalitis (JE) is a vector-borne zoonotic viral disease caused by (Japanese encephalitis virus, JEV). Vaccination is the most effective way to control JE in both humans and animals. However, JEV genotype shift that the dominant genotype III (GIII) has been replaced by genotype I (GI) raised concerns about the effectiveness of GIII-derived vaccines against the GI strain infection. The phenotypic and genotypic characteristics of a live-attenuated genotype I (GI) strain (SD12-F120) of Japanese Encephalitis Virus (JEV) were compared with its virulent parental SD12 strain to gain an insight into the genetic changes acquired during the attenuation process. SD12-F120 formed smaller plaque on BHK-21 cells and showed reduced replication in mouse brains compared with SD12. Mice inoculated with SD12-F120 via either intraperitoneal or intracerebral route showed no clinical symptoms, indicating a highly attenuated phenotype in terms of both neuroinvasiveness and neurovirulence. SD12-F120 harbored 29 nucleotide variations compared with SD12, of which 20 were considered silent nucleotide mutations, while nine resulted in eight amino acid substitutions. Comparison of the amino acid variations of SD12-F120 vs. SD12 pair with those from other four isogenic pairs of the attenuated and their virulent parental strains revealed that the variations at E^{138} and E^{176} positions of E protein were identified in four and three pairs, respectively, while the remaining amino acid variations were almost unique to their respective strain pairs. These observations suggest that the genetic changes acquired during the attenuation process were likely to be strain-specific and that the mechanisms associated with JEV attenuation/virulence are complicated.

Biography:

Muhammad Naveed Anwar belongs to Pakistan. He finished his Ph.D. in Preventive Veterinary Science (Microbiology) from the Chinese Academy of Agricultural Sciences(CAAS), Beijing, China in August 2020 and doctoral thesis title is "Characterization of Live-Attenuated genotype 1 strain of Japanese encephalitis virus". Moreover, he also worked on several relevant projects which include: A Novel recombinant VLP vaccine displaying B and T cells epitopes of JEV; Adaptation of Live-Attenuated JEV vaccine to Vero cells in association with mutations to structural proteins, published his Ph.D. research work in "Viruses" and "Virus research" journals and his current VLP vaccine paper has been published in "Vaccines". His main research interest is in virology, immunology and virus-host interaction. He is an innovative, goal-oriented person who possesses a good analytical approach. Currently he is finding a post-doc position where he would relish his past experience for the benefit of a fruitful outcome.

Introducing the recent developments in the production of various COVID-19 vaccines in Iran

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COVID-19 is a pandemic of unprecedented proportions in recent human history. There have been around 200 million confirmed cases and four million fatalities worldwide in less than 18 months since the pandemic began. Additionally, a great deal of work has gone into finding vaccines that are both safe and effective. By July 2021, 184 COVID-19 vaccine candidates were in pre-clinical development, 105 were in clinical development, and 18 had received emergency use approval from at least one regulatory body. These vaccines include the whole virus live-attenuated or inactivated, protein-based, viral vector, and nucleic acid vaccines. Three billion COVID-19 vaccine doses were given around the world by the middle of 2021, primarily in high-income nations. However, in some countries such as Iran, new vaccines have been produced and even exported to others. The most famous Iranian Covid-19 Vaccine brands are COVIran Barekat, PastoCovac, Spikogen, Razi, and Fakhra which all the, have more than 80% efficiency according to recent research and national statistics and have been welcomed by the people themselves. The way these vaccines work is different, for example, the technology of production of the Barekat vaccine is based on an inactivated vaccine. In other words, "this vaccine is made from the coronavirus, which is weakened or killed by chemicals, which is similar to how the polio vaccine is immunized; nevertheless, Spikogen contains a protein from a virus that has been genetically engineered. The vaccine contains a recombinant protein called spike (similar to the spike protein on the surface of the virus) and is produced with the adjuvant (a substance that increases the effectiveness of the vaccine) to increase its effectiveness. Overall, before the summer of 2022, about 150 million doses of vaccines, both Iranian and foreign, have been injected into Iran. In this speech, we are going to talk about the types of COVID 19 vaccines produced in Iran, their effectiveness, and specifications.

Audience Take Away:

- An overview of the different types of COVID-19 vaccines produced.
- Description of vaccines produced in Iran, their characteristics and effectiveness.
- Investigating the relationship between coronavirus mortality statistics and the amount and types of vaccines used in different communities.
- Steps and difficulties of producing a new vaccine in the event of an epidemic.

Biography:

Dr. Seyedeh Sajedeh Mousavi studied Veterinary Medicine at the Islamic Azad University in Iran and graduated in 2021. She then joined the research group of Dr. Mohammad Jalil Zorriehzahra at the Iranian Fisheries Science Research Institute and in collaboration with Shahid Beheshti University as a research assistant. This national project is entitled "Design and development of a new ELISA kit for the analysis of immunity level of COVID-19 patients".

New developments in the field of aquatics vaccination in Iran and the world

Mohammad Jalil Zorriehzahra*[1], Laleh Yazdanpanah Goharrizi[2], Mina Ziarati[3]
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Aquaculture currently has the highest growth in the world among different disciplines for the production of protein materials (15.7%). However, the occurrence of various infectious diseases (bacterial, viral, fungal and parasitic) among aquatic animals are a serious risk in this field. Also, the economic losses caused by the mortalities of these infectious diseases in aquatic animals are very high. Unfortunately, there is no effective treatment, especially for viral aquatic diseases, and in some cases the loss rate maybe reaches to 100%, which is the biggest obstacle to the growth of aquaculture, mariculture and fish farming in cages. On the other hand, the indiscriminate use of antibiotics to fight infectious diseases in aquaculture has increased the risk of bacterial resistance, and now the third generation of antibiotics is used to fight bacterial diseases in humans.

Meanwhile, the statistics of vaccination consumption in many developed aquaculture countries, such as Norway, have shown that at the same time as vaccination, the use of different vaccines in aquaculture has increased sharply compared to the use of antibiotics that were decreased. In this article, the most important and latest aquatic vaccines and the introduction of new technologies in this category will be discussed and various health, economic and social aspects of aquatic vaccines will be presented. Recombinant, DNA, subunit vaccines could be considered as and the new generation of vaccines and recent advances in aquatic vaccination. In Iran, new and successful experiences in the field of aquatic vaccination have occurred in the last decade, which has been accompanied by valuable achievements in control and prevention of Aquatics infectious diseases.

Audience Take Away:

- The benefits and advantages of Aquatics vaccines and vaccination would be discussed.
- Importance of vaccines and role of vaccination in Control and prevention of Aquatics disease would be noticed.
- The role of Antibiotics and its effects in Microbial resistance would be explained.
- Kinds of variant Aquatics vaccines would be negotiated.
- Improvement of new generation in Aquatic vaccines would be described.

Biography:

Dr. Mohammad Jalil studied Veterinary Medicine at the Tehran University, Iran and graduated as DVM in 1987. He then joined the Iran Veterinary Organization as Research Deputy in 1990. Then he received his PhD degree in 2007 at the University of PUTRA Malaysia (UPM). After passing some management responsibilities in Iranian Fisheries Science Research Institute (IFSRI) as Head of Research Center, Head of Aquatic animal Health & Diseases Dept. He obtained Associate Professor at the IFSRI in 2015. He has published more than 140 research articles in SCI(E) journals, 10 technical Books, 50 Research projects and more than 40 M.Sc. and Ph.D. student.

The involvement of the nurses in vaccination process: History, advantages, limitations, challenges, and perspective of their role in the future

Mohammad Zoladl
Department of Nursing, Yasuj University of Medical Sciences, Yasuj, Iran

Since previous centuries to now, the occurrence of pandemics has been as complex health problem in the world. Production and administration of vaccination has been an important role in the management and control of these pandemics. The main point of this success is participation of the health care staffs. Nurses as the largest part of the health care system staffs are in the ideal position to meet the numerous challenges facing the health system such as pandemics. They can perform their own roles in the first, second, and tertiary levels of prevention consist of preventing injury and illnesses, care, participation in the cure, developing quality assurance procedures, advocate for health promotion, education of the public and patients, participating in rehabilitation, and providing support. In addition, nurses can involve in the research and management processes.

While the nurses' activities focused on the hospital oriented performance in the past years, but now a day, domain of the nurses' practices widespread to the community, and nurses able to play a key part in rolling out vaccination campaigns and preserving public safety. Nurses are topped the list of professions that people deem as trustworthy for the public awareness. Nurses provide guides personal and family health care decisions, and enhance the public knowledgeable about the importance and process of necessary vaccinations, vaccines' efficacy and safety using the communication, so, communication is the most crucial role that nurses play in the vaccination process. Another role of nurses is administrative safety consist of ensuring the safe handling, storage, and administration of vaccinations. Additionally, nurses must take patients' medical histories and be aware of any allergies in order to ensure a safe vaccination process. It is within this panorama that nurses globally can participate in this new task, adding to the contribution they have already made by their incessant work in the front line of the battle against pandemics.

Audience Take Away:

- History of the role of the nurses in vaccination process.
- Advantages, limitations, and challenges of the involvement of the nurses in vaccination process.
- Nurses' role in the vaccination process in the future.

Biography:

Dr. Mohammad Zoladl studied Nursing at the Tarbiat Modares University, Iran and graduated as PhD in 2007. His academic employment begun at the Yasuj University of Medical Sciences in 1990 as Assistant Instructor, and have continued to now. Since 2013 who obtained the position of an Associate Professor to present, he act in the domains of teaching, research, and health care management as the associate Professor. He has published 13, 20, 31, and 85 research articles in journals that indexed in ISI, PUMED, SCOPUS, and Google Scholar respectively.

Immune responses to inactivated vaccine against COVID-19 (CoviVac) in adults' individuals

Bespyatykh J.A.*[1,2], Gospodaryk A.V.[1], Meydman E.O.[1,2], Shansky Ya.D[1]
[1]Federal Research and Clinical Centre of Physical-Chemical Medicine, Moscow, Russia
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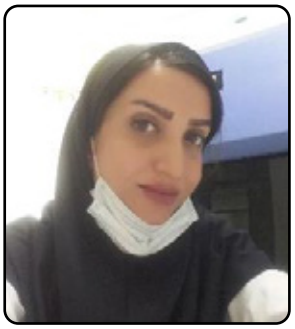
Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread extremely quickly around the world, leading to medical and economic crises. Vaccination against SARS-CoV-2 infection is considered an effective preventive measure to combat this pandemic. The aim of this study was to investigate the specific features of immune responses in adults' individuals vaccinated against COVID-19 with "CoviVac". The study included 120 people aged 18 to 60 with no medical history of COVID-19 coronavirus infection. At the first visit, the inclusion criteria for vaccination were analyzed, including physical examination; HIV, HBV, HCV (Alisei Q.S, Radim, Italy); complete blood count (CBC) (Mythic 18, ORPHEE SA, Switzerland); biochemical analysis (alanine aminotransferase, aspartate aminotransferase, glucose, creatinine, total protein, C-reactive protein, urea, uric acid, bilirubin fractions, total cholesterol (TC), TC high (HDL) and low (LDL) density, triglycerides, alkaline phosphatase, ferritin, serum iron CA-800, FURUNO, Japan)) and a rapid test for the detection of immune globulins (Ig) of G and M-class to SARS-CoV-2 (Ameda, Austria).

The two-stage vaccination with the inactivated whole-virion vaccine "CoviVac" (intramuscularly into deltoid muscle with 14 days' interval) was carried out on 88 adults correspond all the inclusion criteria and had no contraindications. The local adverse effects were pain, indurations and hypersensitivity at the injection site in the most participants. Some of people have fatigue or malaise, pain/sore throat. CBC, blood biochemistry, test for anti-SARS-CoV-2 IgG antibodies by ELISA ((Vector Best, Russia) were carried out during the follow-up visits (14, 35, 113, 173 days after the first stage vaccination). Additionally, during all visiting participants were testing for SARS-CoV-2 infection by PCR in nasopharyngeal swabs. Eight out of 88 vaccinated participants during the study had COVID-19. All patient's had mild form infection (fever, cough, loss of smell and impaired taste). The preliminary immunological activity of the vaccine at day 35 was 32.3%, at day 113 (±7) - 64.9%, 173 (±7) – 34,92%. The effectiveness of the "CoviVac" at 113 (±7) day was 90.9%, at 173 (±7) – 87.5%. There were no observed clinically significant deviations of blood biochemical parameters from their normal values both before and after vaccination. The studied inactivated vaccine "CoviVac" has shown a sufficient level of safety, immunogenicity and effectiveness.

Biography:

Dr. Julia Bespyatykh is currently a Head of Center of Molecular Medicine and Diagnostic, Head of Laboratory of molecular medicine in the Federal Research and Clinical Centre of Physical-Chemical Medicine, Associate Professor of the Expertise Department in Anti-Doping and Drug Control in the Mendeleev University of Chemical Technology of Russia. In 2016 she defended the Ph.D. thesis in biochemistry. She has been involved in the development of biochips for the typing of mycobacteria. Her current research interests mainly focus on the mechanisms of drug resistance and pathogenicity factors of Mycobacterium tuberculosis, using different OMIC's methods, a description of the population structure of the pathogen. She has published more than 30 research articles in SCI(E) journals.



Introducing the latest new findings regarding COVID-19 vaccine in Iran and the world

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In contemporary world, Coronavirus disease (COVID-19) is concerned as a transmittable disease from bat tohumans and a factor caused public health anxiety. Although, several measures were performed to treat it butstill the mortality is seen in around the world. One of the most significant treatment of COVID-19 are vaccineshave effectively produced against this disease. This study prepares some information on the various types ofvaccines in Iran and the world. As far as vaccine is concerned, there is a require to totally release the pathogenesis of virus in human cells, target receptors and the against ways with COVID-19. Various vaccines have been developed with their own advantages and disadvantages. Therefore, increasing awareness about the ones is crucial. Actually there are numerous types of vaccines created by different process that WHO is informed well-organized and latest recent vaccines included the following cases

Pfizer/BioNTech, SII/COVISHIELD and AstraZeneca/AZD1222, Johnson & Johnson, Moderna, Sinopharm, Sinavac, Bharat Biotech BBV152 COVAXIN, Covovax (NVX-CoV2373), Nuvaxovid (NVX-CoV2373). In pursuing, it is argued that what is the technology of theirs making and how the vaccines protect human.What is comes to vaccines, COVID-19 vaccination will help protect human by building immunity without the risk of severe illness. Also, it can prevent from hospitalization and severe side effects of COVID-19 as well as death. That is why, finding out about different types of vaccines and their performance is vital. Although due to valid studies and valuable research access to modern technologies is much easier but impactof these is unpredictable in the future. In present study it has only considered latest information on it.

Audience Take Away:

- They will be aware from the type of vaccines.
- Producing technology and protection from human would be discussed.
- Be familiar with pros and cons of vaccinations in every groups age.

Biography:

Dr. Mina Ziarati successfully completed PhD degree in Biology (Microbiology Sub-branch) at Jahrom University, Iran.She held a position as Microbiologist and Virologist in a laboratory and She has worked there since 2016. She then joined the research group of Prof. M.J. Zorriehzahra at the Iranian Fisheries Science Research Institute (IFSRI) and shehas been performing different projects. Moreover, she has had the honor to contribute to a number of academic papersin her favorite research areas.

Onodera's prognostic nutritional index: Comparison of its role in severity and outcomes of COVID-19 patients among the periods of alpha, delta and omicron variant predominance

Vasiliki Epameinondas Georgakopoulou*[1], Nikolaos Mathioudakis[2], Marinos Zachiotis[2], Stavros Papadakos[3], Maria Triantafyllou[1], Amalia Karapanou[1], Stamatia Samara[1], Georgios Karamanakos[1], Demetrios A.Spandidos[4], Petros Papalexis[5,6], Christos Damaskos[2,7], Kyriakos Tarantinos[8], Pagona Sklapani[9], Nikolaos Trakas[10], Nikolaos V. Sipsas[1, 11]

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The Coronavirus Disease 2019 (COVID-19) has posed a severe worldwide public health threat, affecting multiple organs' function in addition to respiratory function. Several strains of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been circulating around the world since it first arose, with some of them having the ability to escape from natural or vaccine-mediated immunity. The Onodera's prognostic nutritional index (OPNI), which is derived from peripheral lymphocyte count and serum albumin, has been reported to significantly correlate with poor survival and postoperative complications in patients with various diseases and in a few studies of COVID-19 patients. The aim of this retrospective study was to evaluate and compare the OPNI's role as a prognostic indicator in COVID-19 patients among the periods of alpha, delta, and omicron variant predominance. Adult patients who visited or were hospitalized in the COVID-19 Unit of Laiko General Hospital due to SARS-CoV-2 infection were included, covering the second, third (alpha variant), fourth (delta variant), and fifth (omicron variant) pandemic waves. According to our results, the OPNI had a statistically significant difference among patients with mild/moderate, severe and critical disease, with the lowest values observed in patients with critical disease in all studied pandemic waves. Moreover, OPNI was found to be an independent prognostic biomarker of intubation and death in COVID-19 patients, according to multivariate logistic regression analysis, including as confounders age>65 years, male gender, and the presence of comorbidities in all studied periods.

Audience Take Away:

- This presentation reveals factors associated with poor outcomes in patients hospitalized due to COVID-19, covering all the pandemic waves.
- More specifically, this study underlines that the Onodera's prognostic nutritional index is the only independent prognosticator of poor outcomes in all pandemic waves and is associated with the disease severity.
- This data could be used to identify patients at a greater risk for developing severe and critical COVID-19.

Biography:

Dr. Vasiliki E.Georgakopoulou studied Medicine at the National and Kapodistrian University of Athens, Greece and graduated as MD in 2011. She then had her specialization in Respiratory Medicine at Sismanogleio Hospital, Greece. She received her M.Sc degree in 2022 at the Democritus University of Thrace. She is a Respiratory PhysIVCn at Laiko General Hospital, Greece and co-ordinator of Respiratory Infection Group at Hellenic Thoracic Society. She has published more than 70 research articles in peer-reviewed journals.

Lassa fever virus vaccine: Where are we?

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Lassa Fever (LF) is a zoonotic disease associated with an acute and potentially fatal hemorrhagic illness caused by the Lassa Virus (LASV), a member of the family Arenaviridae, Genus Arenavirus. It was discovered in 1968 when two missionary nurses died in Nigeria. The virus is named after the town in Nigeria where the first cases occurred. The primary l hosts for the virus are multimammate rats (Mastomys natalensis) and other rodents, which are distributed widely throughout west, central, and east Africa. Humans are infected by contact with the virus shed in rats' excreta, rats or by eating them (they are considered a delicacy and are eaten by up to 90% of people in some areas). Nigeria is the epicentre of the disease, and has since been reported in Sierra Leone, Liberia, Mali, Guinea, Côte d'Ivoire, Togo, and Benin, and distant countries (Europe & America). The incubation period ranges from 2-21 days, and about 80% of the infected are asymptomatic, and non-specific symptoms but with high incidence and case fatality in recent years. The initial symptoms of LASV are similar to other febrile illnesses, which are similar to malaria illness leading to misdiagnoses. The true burden of LASV is yet to be known, but more than 500,000 may have been infected with about 5,000 deaths per year in West Africa. Despite the global health concern of the virus, little is known about the genetic diversity. Seven lineages (I–VII) of LASV have so far been identified including the most recent lineage VII which has implication in vaccine testing. The recent exponential increase of the disease in Nigeria and the high fatality rate underscores the need to accelerate efforts towards vaccine development for preventing the disease. Consequently, the World Health Organization (WHO) has listed LASV as a high priority pathogen for Research and developed blueprint of treatments and prophylactics.

Amongst others LASV poses the greatest public health risk due to their epidemic potential and for lack of appropriate countermeasures. Currently, there are no licensed vaccines to protect against LASV infection. Although numerous candidates have demonstrated efficacy in animal models, to date, only a single candidate has advanced to clinical trials using technology. The more advanced candidates are based on recombinant measles, Vesicular Stomatitis Virus or Mopiea and Lassa virus reassortants expressing Lassa virus antigens, and the deoxyribonucleic acid platform. However, the current candidate LASV vaccine (IAVIC102) is in phase 1 clinical trial in Liberia, West Africa and uses the recombinant vesicular stomatitis virus (rVSV) vector platform. The World Health Organization stated that the ongoing LASV vaccine testing should protect against lineages I-IV, suggesting that lineage VII is yet to be considered. However, the vaccine development efforts have been largely delayed due to high cost of biocontainment facility (Biosafety Level 4) requirements, the absence of established correlates of immunologic response, and uncertainty regarding the extent to which animal models are predictive of vaccine efficacy in humans. With the intensity of efforts towards Covid-19, LASV vaccine still lags behind with slow and steady progress in both pre-clinical and testing which suggest window of hope for candidates vaccine efficacy. This mini review highlights the recent progress in vaccine development and clinical trials.

Audience Take Away:

- Learn about Lassa Fever disease and Epidemiology of Lassa fever in West Africa.
- Learn about the virology of Lassa Fever virus to help iv vaccine development.
- The Lassa Fever Vaccine: The Journey so far.
- Vaccine development trials progress, Challenges and prospects.

Biography:

Joseph Anejo-Okopi, PhD, Professor of Infectious Disease (Virology), studied B.SC Microbiology, University of Ibadan, Ibadan, Nigeria (Bsc,1994). He obtained an MBA degree 2003, Ambrose Ali University Ekpoma, Edo Stae, Nigeria, and he joined Prof John Idoko on the US PEPFAR Subcontract of AIDS Prevention Initiative in Nigeria (2004) Program. In 2013, he obtained a PhD degree in Microbiology (Virology), Ahmadu Bello University, Zaria Kaduna State, Nigeria. In 2014, he joined Faculty of Natural Science University of Jos. He is a fellow of Harvard Fogarty Global Health program 2017/2018, and IAVI Horizon e-Fellowship in Adolescent HIV/TB Research fellow, Desmond Tutu Health Foundation (DTHF) and International AIDS Vaccine Initiative (IAVI) University of cape Town South Africa. Currently, he is with the Faculty of Science, Federal University of Health Sciences Otukpo, Benue State, Nigeria since, The serving Dean Faculty of Science. He have published more than 85 research articles in peer review journals.

Development and validation of a specific tool to assess vaccination hesitation during the COVID-19 pandemic

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This is a psychometric study aimed at developing and validating a specific scale that assesses the Vaccinal Hesitancy (VH) behaviours of COVID-19 vaccines. Vaccine Hesitancy Scale for Covid-19 vaccines was developed in Brazil based on the Vaccine Hesitancy Scale (VHS), developed by the Strategic Advisory Group of Experts on Immunization Working Group (SAGE-WG). Data collection was carried out at the end of the first wave of the Covid-19 pandemic in Brazil (between March 1st and June 30th of 2021) with convenience sampling and snowball technique, using electronic forms with 1345 participants. We carried out an Exploratory Factorial Analysis (EFA) and Confirmatory Factorial Analysis (CFA) of 10 items. The results for the EFA suggested only a single dimension, as well as the Unidimensional Congruence (UniCo) = 0.95 and Explained Common Variance (ECV) = 0.90; all items presented a significant factor loading (≥ 0.30), with excellent reliability (Cronbach's Alpha= 0.88). The CFA show the model fit indices were satisfactory (x2 = 66.0538, gl = 35, p = 0.001; RMSEA = 0.03 CI [0.02;0.04]); CFI = 0.98; TLI = 0.98) with the factor loadings cutoff ranging between 0.32 and 0.88. Our findings show that the VH assessment tool for COVID-19 vaccines is a valid, reliable scale and is best represented as a unifactorial 10-item structure yielding a total score.

Audience Take Away:

- This presentation will offer information on the development and validation of an assessment tool that assesses the Vaccinal Hesitancy (VH) behaviours of COVID-19 vaccines.
- The audience will have a better understanding of the importance of having a specific scale to assess VH during Covid-19 pandemic.
- Researchers will be able to know about this new tool for better understanding on VH for COVID-19 and perhaps validate it in the context of your country.

Biography:

Angelo Pergo is medical student at Faculty of Medicine of Itajuba, Brazil. Conducting research under the guidance of the Dr. Luciano Vitorino.

Characterization of perfusion-F-specific antibodies elicited by natural infection with human metapneumovirus from two older adults

Christine A. Bricault*[2], Scott A. Rush[1,9], Gurpreet Brar[2,5,9], Ching-Lin Hsieh[1], Emilie Chautard[3], Jennifer N. Rainho-Tomko[4], Chris Slade[2], Ana Kume[2], James Kearns[2,6], Rachel Groppo[2,7], Sophia Mundle[2], Linong Zhang[2], Danilo Casimiro[2], Tong-Ming Fu[2,8], Joshua M. DiNapoli[2,10], Jason S. McLellan[1,10]

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Human MetaPneumoVirus (hMPV) is a major cause of acute respiratory tract infections in both infants and older adults. Currently there are no approved vaccines or antibody therapies for treatment against infection from hMPV. The key target of neutralizing antibodies is the viral fusion (F) glycoprotein, which is required for viral entry. However, little is known about the humoral immune response elicited by humans after natural infection with hMPV. In this study, we used stabilized hMPV F protein trimers to isolate and sort hMPV F-specific B cells from two older adults. We obtained hundreds of class-switched antibody sequences representing over 500 clonotypes, indicative of a highly polyclonal antibody response to hMPV F in these two individuals. In-depth characterization of 136 of these monoclonal antibodies revealed broad recognition of the hMPV F surface, with potent neutralizing antibodies targeting several distinct antigenic sites. Cryo-EM structures were solved for two of the neutralizing antibodies in complex with hMPV F, revealing the molecular basis for recognition of two prefusion-Specific epitopes at the apex of the F trimer. These results provide new insights into the humoral response to hMPV infection in older adults and can help guide development of novel vaccine immunogens.

Audience Take Away:

- How hMPV F-specific antibodies from human PBMC were isolated.
- Characteristics of antibodies to distinct epitopes on the surface of hMPV F trimer.
- Information that could be used for improved hMPV F immunogen design.

Biography:

Dr. Bricault studied Biology at Cornell University and graduated with a B.S. in 2010. She then joined the research group of Professor Dan Barouch at Harvard University in the Center for Virology and Vaccine Research where she completed her Ph.D. in Virology in 2018 and then completed a two-year postdoctoral fellowship. She then joined Sanofi Vaccines in 2018 and has been working on antibody discovery and single cell technologies efforts.

Missed opportunities for vaccination and associated factors among children aged 12-23 months in Cameroon

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[2]Department of Public Health, Faculty of Medicine and Biomedical Sciences, University of Yaounde 1, Yaounde, Cameroon
[3]Division of Health Operations Research, Ministry of Public Health, Yaounde, Cameroon

Low vaccination coverage has been attributed to missed opportunities for vaccination (MOV). This study examines the prevalence of MOV, and its associated factors among children in Cameroon. Data from the 2018 Demographic and Health Survey (DHS) was analyzed for children with at least one vaccination date in the home-based record (HBR). Immunization performance such as accessibility, drop-out, and timeliness, were assessed. Service quality was assessed using MOV. Multiple logistic regressions examined the effect of DHS variables on MOV outcomes, and a decision tree approach was used to study their interaction.

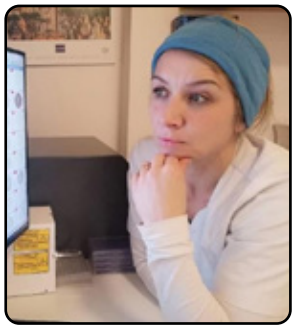
Overall, 1824 children aged 12 to 23 months were surveyed which resulted in 70.45% of cards possession and 85.03% of immunization activities. The national prevalence of MOV for simultaneous vaccines was 75.1% (95% confidence interval (CI) =72; 79). Among those who experienced MOV, 67.4% (95% CI=60-73) were uncorrected MOV. Second birth order children experienced more MOV than first born children (adjusted odds ratio (aOR) =1.67, 95%CI: 1.11-2.47). Children born to non-educated/primary level mothers had increased odds of experiencing a MOV than those born to educated mothers (aOR=1.48, 95%CI=1.007-2.19/ aOR=1.55, 95%CI=1.12-2.09). Children from poorest households were at high risk of experiencing MOV for any vaccine than richest households (aOR=2.04, 95% CI=1.11-3.76). There is a burden of MOV and under immunized children in the population. Direct interventions that target rural poor and focus on equity gaps that relate to maternal education, socio-economic status, and family planning, should be implemented. Such strategies should aim at reducing MOV for the achievement of the immunization agenda 2030 goals.

Audience Take Away:

- Exploring survey dataset after the first publication of survey report is somewhat helpful because it provides more insights on secondary immunization indicator performance.
- This was an academic exercise that can be taught to students to enable them with skill gaining in data analysis.
- This is an example of data analysis that can help countries going through their published survey data.

Biography:

Dr. Solange Whegang Youdom studied Mathematics and applied statistics at the University of Yaounde and University of Paris Descartes. She joined the department of Public Health and Epidemiology at the University of Dschang (Cameroon), Faculty of Medicine and Pharmaceutical Sciences as a Lecturer. She is interested in public health studies and epidemiology and has a methodological background in statistical data analysis. She has published several research articles.



Studies on the evolution of a SARS-COV-2 variant of concern – The story of immune escape in an immunocompromised patient

Sissy Therese Sonnleitner*, Martina Prelog, Stefanie Sonnleitner, Eva Hinterbichler, Hannah Halbfurter, Dominik B. C. Kopecky, Giovanni Almanzar, Stephan Koblmuller, Christian Sturmbaue, Leonard Feis, RalfHorres, Wilfried Posch Gernot Walder

Innsbruck Medical University, Austria

Different scenarios explaining the emergence of novel Variants Of Concern (VOC) of the severe acute respiratorysyndrome coronavirus 2 (SARS-CoV-2) have been reported, including their evolution in scarcely monitored populations, in animals as alternative hosts, or in immunocompromised individuals. Here we report SARS-CoV-2 immune escape mutations over a period of seven months in an immunocompromised patient with prolonged viral shedding. Signs of infection, viral shedding and mutation events are periodically analyzed using RT-PCR and next-generation sequencing based on naso-pharyngeal swabs, with the results complemented by immunological diagnostics to determine humoral and T cell immune responses. Throughout the infection course, 17 non-synonymous intra-host mutations are noted, with 15 (88.2%) having been previously described as prominent immune escape mutations (S:E484K, S:D950N, S:P681H, S:N501Y, S:del(9), N:S235F and S:H655Y) inVOCs. The high frequency of these non-synonymous mutations is consistent with multiple events of convergent evolution. Thus, our results suggest that specific mutations in the SARS-CoV-2 genome may represent positionswith a fitness advantage, and may serve as targets in future vaccine and therapeutics development for COVID- 19.

Audience Take Away:

- This presentation is the story of the emergence of Variants of concern, which is highly interesting and important to know for the further control of SARS-CoV-2 and potential subsequent virological pathogens.
- Most importantly, our study points out the convergent intra-host evolution of specific mutations in SARS-CoV- 2, as they emerged independently in previously described VOC, VOIs and in the strain we studied. Those specific, convergently evolving mutations reveal those neuralgic positions in the SARS-CoV-2 genome that on the one hand represent its highest fitness advantage, but on the other hand also uncovers its highest vulnerability and should be considered as the probably most important points of attack in future vaccine and therapeutics development.

Biography:

Mag. rer. nat. Sissy Therese Sonnleitner studied biology at KF University Graz, specializing in immunobiology and phylogenetics. After successfully graduating, she took up employment as a laboratory manager at Dr. Gernot Walder GmbH in Außervillgraten in 2009. She has been actively involved in the development of the laboratory and routine diagnostics from the beginning and for many years. She is particularly familiar with the isolation and cultivation ofpathogens in the BSL-3 and with the development of new technologies, such as the current Next-Generation Sequencing. She heads a small research group of the laboratory Dr. Gernot Walder – Infektiologie tirol and is currently completing her doctoral studies in medical sciences at the Medical University of Innsbruck.

Participants List

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