

VIRTUAL EVENT

4TH EURO- GLOBAL SUMMIT ON

**ADVANCES IN
CLINICAL AND
CELLULAR
IMMUNOLOGY**



**OCTOBER
21-22, 2026**



**CLINICAL
IMMUNOLOGY**



**CELLULAR
IMMUNOLOGY**



**RESEARCH &
INNOVATION**



**INFECTIOUS
DISEASES**



SCIENTIFIC PROGRAM

DAY 01

WEDNESDAY

OCTOBER 21, 2026

BST (BRITISH SUMMER TIME)

07:25-07:30

Welcome Note

Sessions: Immunology | Autoimmunity | Medical Virology | Cancer Immunology | Immune System | Antiviral Research | Inflammation | Cytokines and Chemokines | Hypersensitivity, Asthma and Allergy | Innate Immune Responses and Host Defense | Vaccines and Immunotherapy | Viral Vectors | Emerging and Re-Emerging Viral Diseases

Distinguished Speaker Talks

07:30-07:50

Title: Immune Regulations during Infections and Effects of Nutraceuticals and Pharmacological

Anju Kaushal, *New Zealand Organization for Quality New Zealand | University of Auckland, New Zealand*

07:50-08:10

Title: Therapeutic Potential of a Stable, Small-Molecule Antimicrobial Peptide from House Fly Hemolymph as a Novel Agent for Cancer Immunotherapy

Yao Liu, *University of Tasmania, Australia*

08:10-08:30

Title: Bone Marrow Aging or Pathology: Platelet Immunity as a Potential Key Node

Shuai Tan, *Capital Medical University, China*

08:30-08:50

Title: Tumor- Draining Lymph Nodes Respond to Immune Checkpoint Inhibition and Orchestrate Tumor Immune Remodeling

Likun Zan, *Shanxi Medical University, China*

08:50-09:10

Title: Antiviral and Immunomodulatory Functions of 1'-Acetoxychavicol Acetate against Tilapia Lake Virus in Tilapia

Norhafiza Mohd Arshad, *Universiti Malaya, Malaysia*

09:10-09:30	Title: Harnessing Machine Learning and Deep Learning for Non-Communicable Disease Diagnosis: An In-Depth Analysis Pariza Kamboj, <i>Sarvajani University, India</i>
REFRESHMENT BREAK 09:30-09:40	
09:40-10:00	Title: Computational Approaches for Predicting Drug–Target Interactions: An Extensive Review and Integration of Methods Aswathi G S, <i>Central University of Kerala, India</i>
10:00-10:20	Title: Chemopreventive Effect of Ethanolic Extract of <i>Luisia tenuifolia</i> Blume Whole Plants during DMBA-Induced Skin Tumorigenesis Sakthi Priyadarsini. S, <i>SRM Institute of Science and Technology, India</i>
10:20-10:40	Title: MediXAI System for Predicted Outcome Analysis Using LIME and SHAP for Structured Medical Datasets D. Ramyaa, <i>Sri Sivasubramaniya Nadar College of Engineering, India</i>
10:40-11:00	Title: Novel Biosurfactants from <i>Fictibacillus</i> Sp.: A Promising Approach for Immuno-Allergen Management Nagalambika Prasad, <i>JSS Academy of Higher Education & Research, India</i>
11:00-11:20	Title: Application of Personalized Allogeneic Bioimplants in Reconstructive Surgery for Charcot Neuro Osteoarthropathy Aikush Karlosovna Nazaryan, <i>Samara State Medical University, Russia</i>
11:20-11:40	Title: Patient-Derived Brain Organoids Reveal Divergent Neuronal Activity across Subpopulations of Autism Spectrum Disorder Nisim Perets, <i>Itay & Beyond LTD, Israel</i>

11:40-12:00	Title: Efficacy of Photobiomodulation Therapy in Restoring Thyroid Function and Volume in Autoimmune Hashimoto Thyroiditis Venera Berisha-Muharremi, <i>University of Prishtina Kosovo</i>
12:00-12:20	Title: The Origins of Anti-Vax Beliefs Nicky Hayes, <i>University of Suffolk, UK</i>
12:20-12:40	Title: Timing Matters: An Observational Study on Circadian Effects of Spinal Anesthesia in Cesarean Delivery Evangelia Nikouli, <i>General Hospital of Komotini, Greece</i>
12:40-13:00	Title: Integrating Acute Flaccid Paralysis Surveillance, Environmental Surveillance and Vaccination Strategies to Prevent Poliovirus Re-Emergence in Nigeria: A Narrative Review Eric Okorie Nwaze, <i>David Umahi Federal University of Health Sciences, Nigeria</i>
LUNCH BREAK 13:00-13:30	
13:30-13:50	Title: Integrated Surveillance of Polio-Negative Acute Flaccid Paralysis cases for Childhood Tuberculosis: A Novel GeneXpert-Based Screening Approach in Rivers State, Nigeria Ifeoma Nwadiuto, <i>Rivers State University, Nigeria</i>
13:50-14:10	Title: Patient with MGRS/PGNMID without Detection of a Peripheral Clone: Case Report and Literature Review Agatha Graziella Larrazábal Carrillo, <i>Fundación Arturo López Pérez (FALP), Chile</i>
14:10-14:30	Title: Epidemiological Profile and Temporal Trend Analysis of Osteomyelitis at a Teaching Hospital Gabriel Moreira Accetta, <i>Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil</i>
14:30-14:50	Title: Liposome-Encapsulated Antibiotics for the Therapy of Mycobacterial Infections Nejat Düzgüneş, <i>University of the Pacific School of Dentistry, USA</i>

14:50-15:10	Title: The Role of Histone Deacetylase Isoform in Modulating Immune Checkpoint Therapy Effectiveness Ravi P. Sahu, <i>Wright State University, USA</i>
15:10-15:30	Title: The Humanized Anti-CitH3 Antibody for Sepsis: Preclinical Efficacy and Translational Potential Chao Quan, <i>University of Michigan Medicine, USA</i>
15:30-15:50	Title: Investigating Sick Building Syndrome in Urban Residential Buildings in Tehran: A Statistical and Predictive Modeling Approach Negin Hamidi, <i>The University of Oklahoma, USA</i>
15:50-16:10	Title: Pathogenic Strains of a Pathobiont Gut Bacterium Induces Systemic Thrombo-Inflammatory Pathways in an Endotype of Lupus Nephritis Gregg Silverman, <i>NYU Grossman School of Medicine, USA</i>
16:10-16:30	Title: Macroscopic Markers and Immune Phases of Dolphins Healing Shark Bites at Sea Ann Weaver, <i>Good-Natured Statistics Consulting, LLC USA University of Florida College of Medicine, USA</i>
16:30-16:50	Title: Expanding Immunization Access through Non-Traditional Settings: An Interprofessional Model for HPV Vaccine Delivery in Dental Care Ana C Candia Solari Neumann, <i>UTHealth Houston School of Dentistry, USA</i>
16:50-17:10	Title: Inhibition of Pathogenic Bacterial Growth Using Secondary Metabolites Obtained from Plant Extracts Lorena Fernanda Ortega García, <i>Meritorious Autonomous University of Puebla, México</i>
17:10-17:30	Title: Coordinated Interferon, Cytolytic, Antigen-Presentation and Checkpoint Programs Define Immune-Inflamed Phenotypes in Treatment-Naive Nasopharyngeal Carcinoma Yunjoo Lee, <i>Massachusetts General Hospital, USA</i>

END OF DAY-1

SCIENTIFIC PROGRAM

DAY 02
THURSDAY

OCTOBER 22, 2026

BST (BRITISH SUMMER TIME)

07:25-07:30

Introduction

Sessions: Immunology | Autoimmunity | Medical Virology | Cancer Immunology | Immune System | Antiviral Research | Inflammation | Cytokines and Chemokines | Hypersensitivity, Asthma and Allergy | Innate Immune Responses and Host Defense | Vaccines and Immunotherapy | Viral Vectors | Emerging and Re-Emerging Viral Diseases

Distinguished Speaker Talks

07:30-07:50

Title: Osteal Macrophages as Emerging Regulators of Bone Remodeling: Molecular Functions and Therapeutic Targeting in Osteoporosis

M Alaa Terkawi, *Hokkaido University, Japan*

07:50-08:10

Title: Functional Role of Putative Cyclin-Binding Motif within the Nuclear Localization Sequence of CHI3L1

Emiko Mizoguchi, *Kurume University School of Medicine Japan | Brown University Alpert Medical School, USA*

08:10-08:30

Title: Effects of a Glutamine and Arginine Combination on the Inflammatory Response in a Lipopolysaccharide-Induced Sepsis Model at different Time Points of Supplementation

Maulydia Maulydia, *Universitas Airlangga, Indonesia*

08:30-08:50

Title: Pharmacovigilance and Clinical Insights into Perindopril-Induced Thrombocytopenia: A Case Report of Diagnostic Challenges and Therapeutic Alternatives

Vincent Aurelius Gonaldy, *Ciputra University, Indonesia*

08:50-09:10

Title: Immunotherapy in Treating Gastrointestinal and Hepatobiliary Cancer

Li Hoi Lam Karen, *Queen Mary Hospital, Hong Kong*

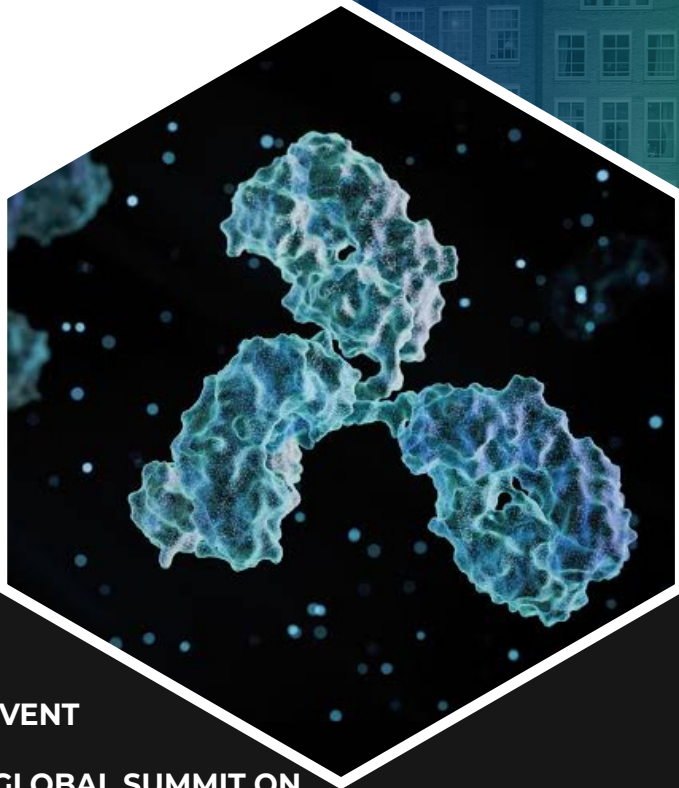
09:10-09:30	Title: Application of Artificial Intelligence Technique and Simulation on the Production of Shariah Compliance Influenza Vaccine Norliza Abd. Rahman, <i>Faculty of Engineering & Built Environment, Malaysia</i>
REFRESHMENT BREAK 09:30-09:40	
09:40-10:00	Title: Genomic and Transcriptomic Insights into Innate Immunity Signatures in Indigenous Indian Cattle Suneel Kumar Onteru, <i>ICAR-National Dairy Research Institute, India</i>
10:00-10:20	Title: Demyelinating Disorders in Women: Epidemiology, Immunology and Clinical Implications Across MS, NMOSD and MOGAD Syeda Maryam Batool, <i>Jinnah Sindh Medical University Pakistan</i>
10:20-10:40	Title: Comparative Evaluation of Radiological and Histopathological Assessment of Depth of Invasion and Tumour Thickness in Oral Squamous Cell Carcinoma among North Indian Patients Fatima Khan, <i>Hamdard Institute of Medical Sciences and Research, India</i>
10:40-11:00	Title: Could Fabry Disease Cause Giant Coronary Aneurysms in a 7-Month-Old infant: A case Report Sahar Naderi Shiran, <i>Tehran University of Medical Sciences, Iran</i>
11:00-11:20	Title: Clinical Outcomes of COVID-19 Convalescent Plasma According to Treatment Timing and ELISA Antibody Levels: A Real-World Retrospective Cohort Study Özlem Bayraktar Saral, <i>Trabzon University, Türkiye</i>
11:20-11:40	Title: Autophagy Genes Transcription and Ultrastructure Changes in Brain Cells of Mice in Ageing and Neurodegeneration Development Tatiana Aleksandrovna Korolenko, <i>Research Institute of Neurosciences and Medicine, Novosibirsk, Russia</i>

11:40-12:00	Title: Protective Efficacy of the Recombinant Hvt+Ibd+H5 Alone or Boosted by Subunit Inactivated Vaccine against Experimental Challenge with Hpai-H5n1 Clade 2 Jose Luis Losada Torres, <i>Boehringer Ingelheim GmbH, Germany</i>
12:00-12:20	Title: Improving Psychiatry Processes in Abidjan and How Digital Assistants Can Help the Consultation Diallo Mohamed Bobo, <i>Université Félix Houphouët-Boigny, Cocody Campus, Côte d'Ivoire</i>
12:20-12:40	Title: Health and Safety Hazards and Associated Organisational and Social Support Factors for Deathcare Workers: A Global Scoping Review Mary Aku Ogum, <i>University of Cape Coast, Ghana</i>
12:40-13:00	Title: Preoperative IV Iron and Postoperative Blood Transfusion Reduction in Non-Anaemic Patients Undergoing Cardiac Surgery: A Systematic Review and Meta-Analysis of RCTs AGNAOU Younes, <i>Paris-Est Créteil Val-de-Marne University, France</i>
LUNCH BREAK 13:00-13:30	
13:30-13:50	Title: Clonal Hematopoiesis (CHIP) as a Modifiable Cardiovascular Risk Factor: Targeted Anti-Inflammatory Intervention Trials Opeyemi Esther Taiwo, <i>Olabisi Onabanjo University Teaching Hospital, Nigeria</i>
13:50-14:10	Title: Knowledge, Awareness and Antibiotic-Use Practices Regarding Antimicrobial Resistance among Healthcare Students in Niger Delta University, Bayelsa State, Nigeria Enekeme Isaac Ayibadeimode Benefit, <i>Niger Delta University, Nigeria</i>
14:10-14:30	Title: The Potential of Alamandine in Airway Hyperresponsiveness in an Ovalbumin-Induced Asthma Model Vitória Nedel Rech, <i>Universidade Federal de Ciências da Saúde de Porto Alegre, Brazil</i>

14:30-14:50	Title: Rethinking Proteinuria: Resolution of Donor Derived EXT2-Associated Membranous Nephropathy Following Renal Transplantation Mike Fruscione, <i>Hackensack Meridian Hackensack University Medical Center, USA</i>
14:50-15:10	Title: Polycomb Pathway Targeting Enhances Cisplatin Response and Reveals a Potential Role for the Tumor Immune Microenvironment in Testicular Germ Cell Tumors Doha Shokry, <i>University of Illinois Urbana-Champaign USA</i>
15:10-15:30	Title: An Update on Stevens Johnson Syndrome/Toxic Epidermal Necrolysis, A Drug-Induced, Immune-Mediated Severe Cutaneous Adverse Reactions Omer Iqbal, <i>Loyola University Stritch School of Medicine, USA</i>
15:30-15:50	Title: Imaging Immune Cell Metabolism <i>in situ</i> in a Live Organism Veronika Miskolci, <i>Rutgers University, USA</i>
15:50-16:10	Title: One Eye, Two Microliters: Ultra-Sensitive NfL Quantification in Mouse Aqueous Humor Using NULISA Jeongsup Shim, <i>Genentech, USA</i>
16:10-16:30	Title: Spatial Multi-Omics Reveals Distinct Stromal-Immune Responses in Partial and Poor Responders to Neoadjuvant Therapy in Pancreatic Ductal Adenocarcinoma Xiaofei Zhang, <i>NYU Grossman Long Island School of Medicine, USA</i>
16:30-16:50	Title: Adequate Simulation Methods for Random SIR, SIS and SIER Models Based on SDEs Henri Schurz, <i>Southern Illinois University, USA</i>
16:50-17:10	Title: Efficacy of Vitamin C and <i>Chlorella pyrenoidosa</i> as Adjuvants in Reducing Blood Lead Levels (BLL) among Occupationally Exposed Workers in Ecuador: A 6-Year Longitudinal Study Alywin Hacay Chang-León, <i>Universidad Espíritu Santo Ecuador</i>

END OF DAY-2

DAY 01



VIRTUAL EVENT

4TH EURO-GLOBAL SUMMIT ON

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY

OCTOBER 21-22, 2026

SPEAKER TALKS



Immune Regulations during Infections and Effects of Nutraceuticals and Pharmacological

Anju Kaushal

Panjab University, India

New Zealand Organization for Quality, New Zealand

University of Auckland, New Zealand

The viruses have the tendency to evade immune system and carry out the epigenetic changes. During novel infection the swift innate immune response activates that results in releasing various proinflammatory cytokines and chemokines – TNF- α , MIP1, IL-6 from cells. The hyperinflammatory adaptive response in turn triggers the undue activation of macrophages and monocytes with activated MAPK -P38 and AP1 activation. Thus, signals transmitted to the neighbor cells resulting in hypoxia (Platelet hyperactivation), prothrombin clotting factors activation (thrombo inflammation), activation of TF, NLRP3 inflammasomes, accumulation of immune cells can damage the tissues and organs with short O₂ supply, and lack of essential nutrients could also implicate the psychological well-being of patients. If not treated on time could have fatal consequences with multiorgan failure. The essence of nutraceuticals and pharmaceutical are to awaken and modulate the immune regulations to lower down the over stimulations. The Bioactive dietary fibers- prebiotics and probiotics and vitamin D, A, E, B and C are metabolic antioxidants and support energy level to create the positive impact on health. Additionally, the vaccines, antibiotics, and corticosteroids also enhance the active and passive immunity, if used at optimal level to significantly reduce the ICU based hospitalizations, control ARDS, alveolar O₂ failure thus minimize the mortalities. Timely used therapeutics help build homeostasis in tissues and organs, control hyperinflammation, drop down the insulin resistance and could lead to minimize developing the autoimmune disorders. This presentation is based on the adoption of right strategy of treatment will not only cut down the hospital stay, but also protect patients contracting the complicated secondary infections would help reduce the healthcare burden.

Table: The immune regulations via vaccines, vitamins, microbiome, Dietary supplements and other microbial metabolites.

NUTRACEUTICAL INTERVENTIONS

Probiotics

L.rhamnosus - effective in VAP in high risk ICU patients
L.casei - increase apoptosis against influenza
 Probiotics activate Dcs, NK- cells, T-cells, IgA and IgG
 Regulate IIFN
L.plantarum reduce IFN- γ & TNF- α
Enterococcus faecium NCIMB 10415 control TGEV
 IL-4 & IL-10 increase in Upper Resp. Infections
 Secrete mAMPs, PPR and TLR to regulate normal CD4+ activities

Dietary Fibres

5g dietary fibres reduce CRP, IL-6 and TNF- α
 Phenolic compounds promote *Lactobacillus*, *Bifidobacterium*, *Akkermansia* & *Faecalibacterium*
 Inhibit *Helicobacter pylori*, *Staph* spp.
 Eliminate pathogens through ROS, G-protein GPR3 activation
 Adjuvating effects of SCFAs halt the HADC activity in histones for post transcriptional modifications
 SCFAs control NFkB control inflammatory cascade

Vitamins

Vit C- Active against pathogens e.g. *Mycobacteria*, *Pseudomonas*, *MRSA*, *Enterobacter* etc., but favours the growth of *Bifidobacterium*, *Lactobacillus*, *Akkermansia*, *Roseburia* etc.
 Vit A- Halt norovirus and modulate GM
 Vit D- Increase beneficial bacteria and higher dose reduce the risk of hospitalization

Selenium, Zn, w-PUFA

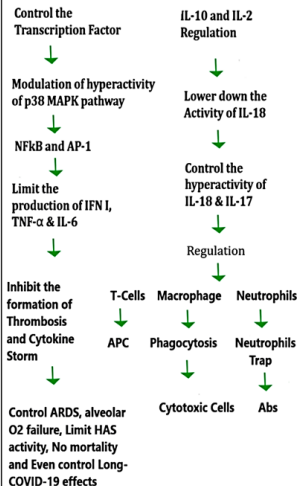
Selenium activates GPxs to play a role in redox-regulations
 Zn- provides calprotectin mediated antimicrobial effects and develop innate response against *C. difficile*
 w-PUFA- activate beneficial bacteria, act as 'Specialized Pro-resolving mediators', reduce the COVID-19 death risk by 12-21%

Flavonoids

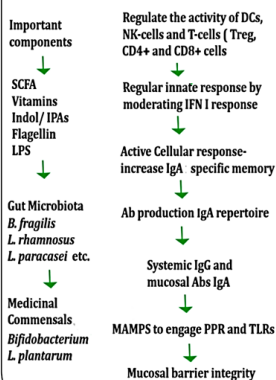
Suppress TLR4, reduce 1kB and NFkB
 DAT metabolite of *Clostridium arbutus* increase the survival of influenza infected mice

PROTECTIVE IMMUNE RESPONSE THROUGH LUNGS AND GUT

ALVEOLAR CELL LINING ACE-2



GUT CELL LINING



PHARMACEUTICAL INTERVENTIONS

Corticosteroids/ Dexamethasone

Offset 'Cytokine Storm' reduce deaths by 28-62%, increase mucosal integrity and microbiota regulations

Antibiotics

Broad Spectrum antibiotics usage deplete Gram +/-ves
 impair humoral immunity
 hyper activate Macrophages M2, Inflammasome activation AP-1 and NR4A

Interferon

IFN+ribavirin treatment- suppress the viral replication
 Induce STAT-1 phosphorylation
 Change the functions of IFN antagonists ORF 3b and ORF 6

Vaccines

BCG prime the innate response building trained immunity
 It reprogrammes monocytes to regulate response through gut microbiome
Bifidobacterium adolescentis probiotic provide high Ab level with CoronaVac controlling the waning immunity

Eubacterium rectale and *Rosburia faecis*- having adjuvant property to provide Long lasting immunity

Ruminococcus torques, *Eubacterium ventriosum* and *Staphylococcus salvarius* - could increase the vaccine effectiveness

L.plantarum increase the humoral and cellular immunity against SARSCoV-2 with COVID-19 DNA vaccination

Indol and IPA produced by human gut microflora can modulate IgA production

Indol also generates antibacterial effects against MDR *Mycobacterium tuberculosis*

Presenter:

Anju Kaushal

New Zealand Organization for Quality, New Zealand
 University of Auckland, New Zealand



Therapeutic Potential of a Stable, Small-Molecule Antimicrobial Peptide from House Fly Hemolymph as a Novel Agent for Cancer Immunotherapy

Yao Liu¹, Jia Zhong² and Xianyi Sha³

¹Wicking Dementia Research and Education Centre, College of Health and Medicine, University of Tasmania, Australia

²Department of Medical Oncology, CAMS Key Laboratory of Translational Research on Lung Cancer, State Key Laboratory of Molecular Oncology, National Cancer Center/ National Clinical Research Center for Cancer/Cancer Hospital, Chinese Academy of Medical Sciences, Peking Union Medical College, China

³School of pharmacy, Fudan University, China

Antimicrobial peptides (AMPs) are a class of small-molecule peptides widely found in the innate immune system. Some of AMP exert their effects through a dual mechanism involving both the direct killing of cancer cells and the regulation of immune system and are redefined as anticancer peptides (ACPs). The experimental studies found that an AMP purified from the hemolymph of house fly after immunization, have small molecular weights, high thermal stability, good water solubility and wide antibacterial spectrum, and their antibacterial activity are higher than penicillin. In addition, the novel AMP possesses both antibacterial and anticancer properties. It has killing effects on cancer cells, such as lung cancer, but had no adverse effect on normal human cells. It significantly inhibited the growth of Lewis lung cancer cells in mice (effective concentration: 50 μ M/L). 48h after the treatment of antimicrobial peptide, the OD value of normal human B lymphocytes was significantly higher than that of the control group, which indicated that the antimicrobial peptide did not have any adverse effect on the normal human B lymphocytes, and might be able to promote their growth. Decrease in cell growth rate, appearance of vesicles at cell edges and the onset of apoptosis were found in the lung cancer cells cultured *in vitro* after incubate with these antimicrobial peptides. Animal toxicology experiments show that the novel AMP has no liver and kidney toxicity and haemolysis. These findings suggest that this novel AMP holds significant potential for application and commercial value in cancer treatment, and is expected to become a new area of focus in the field of cancer therapy, particularly in the field of cancer immunotherapy.

Presenter:

Yao Liu

University of Tasmania, Australia



Bone Marrow Aging or Pathology: Platelet Immunity as a Potential Key Node

Shuai Tan^{1,2}, Yumeng Li^{1,2}, Yaochi Chen^{1,2}, Jing Sun^{1,2}, Chunxiao Xue^{1,2}, Zongqu Sun^{1,2}, Jing Ni^{1,2} and Wanling Sun^{1,2}

¹Department of Hematology, Xuanwu Hospital, National Center for Neurological Disorders, National Clinical Research Center for Geriatric Diseases, Xuanwu Hospital, Capital Medical University, China.

²Comprehensive Center for Neuro-oncology, Xuanwu Hospital Capital Medical University, China

Background: Acquired aplastic anemia (AA) is characterized by hematopoietic failure, with bone marrow hematopoietic stem cells (HCCs) being destroyed. In addition to their thrombotic and hemostatic functions, platelets have increasingly been recognized for their immune regulatory roles in recent years. What is more, for chronic inflammation immune response, platelet-specific TGF β deficiency aggravates atherosclerosis, vascular inflammation and hypercholesterolemia in mice. This study reveals that the "platelet-immune cell-bone marrow (PIB)" axis mediated by platelet factor 4 (PF4) plays a key role in severe aplastic anemia (SAA), suggesting that the essence of bone marrow failure (BMF) may be caused by immune imbalance.

Methods: Establishment of a mouse model of SAA: B6D2F1 mice underwent total body irradiation (TBI) followed by lymphocyte infusion from C57BL/6 mice. Peripheral blood, lymph nodes (LN), spleen, and bone marrow (BM) were collected from the mice. Single-cell sequencing, immunofluorescence, flow cytometry, and Western Blot were used to analyze the immune responses mediated by PF4 released from platelets, such as T cell and macrophage, as well as the characteristics of mitochondrial energy metabolism. Meanwhile, clinical data of AA patients treated in our center from 2012-2025 were analyzed for platelet and lymphocyte profiles, and the results were comprehensively correlated with the animal study findings.

Results: Early in BMF, platelets exhibit mitochondrial dysfunction and impaired activation; in the peripheral immune organs and bone marrow of bone failure mice, central memory T (T_{cm}) cells of CD4⁺/CD8⁺ are significantly expanded; despite an increase in mitochondrial mass, their membrane potential is impaired, forming a "pathological memory pool"; the above ultimately leads to PF4-mediated immune homeostasis disorder. CD4⁺ T cells infiltrate the bone marrow via the CXCR3 axis, while CD8⁺ T cells migrate through a non-canonical CXCR5 pathway. In terms of adaptive immunity: the transcription factor FoxP3 is suppressed, with decreased number and energy metabolism of Treg cells;

T-bet is upregulated, leading to hyperactivation of Th1 cells. In terms of innate immunity: macrophages display M1-type polarization with a "high TFAM/low p53" phenotype. Meanwhile, single-cell analysis in AA patients identified a cell population with molecular characteristics resembling SAA mice-derived Mx cells (high CD68, PF4, S100a8/a9, Apoc1, CCR3; low CD163, C1q). The Akt-PGC1 α -TFAM pathway is upregulated, driving metabolic hyperactivation, while p53 and its phosphorylation levels are elevated, collectively mediating functional reprogramming of T cells and macrophages.

Conclusion: Platelets regulate the immunity by releasing PF4, leading to BMF and forming the immune remodeling of AA patients. This study reveals a brand-new hematological mechanism: platelet-driven mitochondrial energy metabolism in immune cells causes BMF, named "PIB Axis". Platelets are no longer merely involved in thrombosis and hemostasis, providing new potential targets for future hematological diseases.

Presenter:

Shuai Tan

Capital Medical University, China



Tumor- Draining Lymph Nodes Respond to Immune Checkpoint Inhibition and Orchestrate Tumor Immune Remodeling

Likun Zan¹, Jinzhu Zhang², Jian Ma², Yaru Niu², Jialiang Liu², Zhexue Wang², Jinyuan Guo³, Yongsheng Meng⁴, Ruifang Sun⁴, Zhen Zhang¹, Haiyi Liu⁵, Juan Xu⁶, Xu Guan² and Xishan Wang²

¹Department of Pathology, Shanxi Cancer Hospital/Shanxi Hospital Affiliated to Cancer Hospital, Chinese Academy of Medical Sciences/Cancer Hospital Affiliated to Shanxi Medical University, China

²Department of Colorectal Surgery, National Cancer Center/National Clinical Research Center for Cancer/Cancer Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, China

³Shanxi Medical University, China

⁴Department of Tumor Biobank, Shanxi Cancer Hospital/Shanxi Hospital Affiliated to Cancer Hospital, Chinese Academy of Medical Sciences/Cancer Hospital Affiliated to Shanxi Medical University, China

⁵Department of Colorectal Surgery, Shanxi Cancer Hospital/Shanxi Hospital Affiliated to Cancer Hospital, Chinese Academy of Medical Sciences/Cancer Hospital Affiliated to Shanxi Medical University, China

⁶College of Bioinformatics Science and Technology, Harbin Medical University, China

Objective: Immune checkpoint inhibitors have traditionally been understood to exert their effects primarily within the tumor microenvironment, particularly targeting CD8 + T cells. However, recent studies have highlighted a pivotal role of tumor-draining lymph nodes in mediating responses to immune checkpoint inhibitor therapy. This study aimed to elucidate the specific mechanisms by which tumor-draining lymph nodes respond to immune checkpoint inhibitor therapy and regulate the tumor microenvironment in human colorectal cancer.

Methods: We performed single-cell RNA sequencing and T cell receptor sequencing on tumor-draining lymph nodes and tumor tissues from patients with colorectal cancer. Through in-depth analysis of the single-cell data, we established the connection between TDLNs and tumor, and explored the impact of immune checkpoint inhibitor therapy on the immune microenvironment of tumor-draining lymph nodes. In addition, we conducted animal experiments to validate these findings.

Results: Our findings revealed that immune checkpoint inhibitor treatment induced the expansion of tumor-specific CD8 + effector memory T cells within tu-

mor-draining lymph nodes, which may serve as a source for the progenitor-exhausted CD8⁺ T cells in the tumor microenvironment. Moreover, conventional dendritic cells type 1 and macrophages within tumor-draining lymph nodes facilitated this process. We also observed that immune checkpoint inhibitor therapy promoted the expansion of tumor-specific CD4⁺ follicular helper T cells in tumor-draining lymph nodes, which may explain the increase of CD4⁺ follicular helper T cells in the tumor microenvironment after immune checkpoint inhibitor therapy. These hypotheses were corroborated through experiments in mice.

Conclusion: Our findings delineate the critical regulatory function of tumor-draining lymph nodes in modulating the tumor microenvironment during Immune checkpoint inhibitor therapy.

Presenter:

Likun Zan

Shanxi Cancer Hospital, China

Chinese Academy of Medical Sciences, China



Antiviral and Immunomodulatory Functions of 1'-Acetoxychavicol Acetate against Tilapia Lake Virus in Tilapia

Norhafiza M. Arshad¹, Muhamad Afiq Aziz² and Darrel Nathan³

¹Centre for Research in Biotechnology for Agriculture, Universiti Malaya, Malaysia

²Institute of Biological Sciences, Faculty of Science, Universiti Malaya, Malaysia

³Institute for Advanced Studies, Universiti Malaya, Malaysia

Tilapia Lake Virus (TiLV) is an emerging viral pathogen responsible for severe disease outbreaks and substantial economic losses in global tilapia aquaculture. Given the lack of effective antiviral therapies, there is growing interest in natural compounds that can both inhibit viral replication and enhance host immune defenses. This study investigated the antiviral and immunomodulatory properties of 1'-acetoxychavicol acetate (ACA), a bioactive phenylpropanoid isolated from *Alpinia conchigera*, using molecular docking, *in vitro* assays, and *in vivo* challenge experiments. Computational analysis revealed a strong interaction between ACA and the host nuclear export protein CRM1, suggesting a host-targeted antiviral mechanism. In cell culture, ACA exhibited low cytotoxicity and significantly reduced TiLV-induced cytopathic effects and viral RNA replication in a dose-dependent manner. In TiLV-challenged Nile tilapia, ACA treatment significantly improved survival, providing protection comparable to ribavirin. Furthermore, ACA mitigated virus-induced anaemia by restoring erythrocyte-associated haematological parameters. Immune assessments demonstrated that ACA enhanced both innate and humoral immune responses, as evidenced by increased plasma IgM and complement C3 levels, elevated mucus lysozyme activity, and significant modulation of immune-related gene expression in the spleen and head kidney. These findings indicate that ACA confers protection against TiLV through complementary antiviral and immunomodulatory mechanisms, highlighting its potential as a natural immunotherapeutic agent for improving disease resistance and supporting sustainable viral disease management in aquaculture.

Presenter:

Norhafiza Mohd Arshad

Universiti Malaya, Malaysia



Harnessing Machine Learning and Deep Learning for Non-Communicable Disease Diagnosis: An In-Depth Analysis

Pariza Kamboj¹ and Dharmishtha Chaudhari²

¹Department of Computer Engineering, Sarvajani University, India

²Department of Computer Engineering, Gujarat Technological University, India

The growth of artificial intelligence has been exponential, with remarkable advancements in various sectors like entertainment, finance, education, retail, automobile, agriculture, manufacturing, energy, and healthcare, to name a few. Healthcare is a very vast field that encompasses a variety of aspects like medical treatment, prevention, diagnosis, and overall well being for humans. Machine learning, a subset of artificial intelligence, and deep learning, a subset of machine learning, play significant roles in the medical domain by providing reactive, proactive, and predictive healthcare services to the patients. The motivation behind the diagnosis of non-communicable diseases is driven by their rising global burden, long-term impact on health systems, and the need for early intervention to reduce mortality, disability, and healthcare costs. This paper provides a comprehensive survey based on machine learning and deep learning techniques used to diagnose various non-communicable chronic diseases such as cardiovascular diseases, cancers, diabetes, lung disease, mental health disorders, Alzheimer's disease, Parkinson's disease, epileptic seizure, parkinson's disease, and chronic kidney diseases. The review then summarizes the most recent trends and approaches in machine learning and deep learning-based disease diagnosis, considering the following elements: name of authors, name of the journal, year of publication, name of disease, modality, ML/DL algorithm used with performance parameter, dataset used, dataset instance, validation method used, intractability, features/major biomarkers, code availability and overall quality of the literature. Finally, this paper highlights key results, and research challenges and provides insight into future scope and opportunities in the healthcare area using machine and deep learning techniques.

Presenter:

Pariza Kamboj

Sarvajani University, India



Computational Approaches for Predicting Drug-Target Interactions: An Extensive Review and Integration of Methods

Aswathi G S and **Deepthi K**

Department of Computer Science, Central University of Kerala,
India

Drug-Target Interaction (DTI) prediction is the process of identifying whether a drug (a chemical compound) will interact with a biological target, usually a protein, enzyme, or receptor, inside the body. It helps to find out which drugs can bind to which targets. The outcome of a DTI is typically a desired therapeutic effect, such as curing or managing a disease. The strength of these interactions is measured using binding affinity values. Accurately identifying these interactions helps in understanding therapeutic mechanisms, discovering new drugs, predicting side effects, and enabling drug repurposing. Traditional biological experiments for predicting DTIs are costly, labor-intensive, and cause delays due to the presence of a large number of possible drug-target pairs. As a result, computational methods are being widely developed to enhance the speed and precision of DTI predictions. However, several challenges still exist, including the limited availability of labelled datasets, lack of information on how these interactions occur and insufficient structural information of proteins.

In this study, we examine and compare major computational strategies for DTI prediction, including machine learning-based, matrix factorization-based, and network-based approaches. Since these methods rely on different datasets, biological features, and prediction models, systematic comparisons are necessary to identify the most effective and accurate method. Different computational strategies for DTI prediction, along with their hybrid and multi-modal approaches that integrate chemical, biological and network information for better performance and accurate predictions are discussed here. Finally, we conclude by comparing and summarizing the performance of the existing methodologies and critical challenges in the area of DTI prediction.

Presenter:

Aswathi G S

Central University of Kerala, India



Chemopreventive Effect of Ethanolic Extract of *Luisia tenuifolia* Blume Whole Plants during DMBA-Induced Skin Tumorigenesis

Sakthi Priyadarsini. S

Department of Pharmacognosy, SRM College of Pharmacy,
SRM Institute of Science and Technology, India

About 40% of all cancer cases that are newly diagnosed worldwide are skin cancer incidences. *Luisia tenuifolia* Blume is a slender epiphytic orchid, traditionally used for cuts, boils, and abscesses. The present study investigates the chemopreventive potential of ethanolic whole plant extracts of *Luisia tenuifolia* Blume against skin cancer. The acute and sub-chronic dermal toxicity studies carried out as per the OECD guidelines 402 and 411 respectively, indicated the ethanol extract to be safe up to 2000 mg/kg body weight respectively. The chemopreventive potential evaluated on DMBA/Croton oil-induced skin cancer model revealed that the topical application of ethanol extract of *Luisia tenuifolia* Blume, 10 minutes prior to the inducing agent on the dorsal skin of mice delayed the onset of tumor and reduced tumor incidence, tumor burden and tumor yield in treated mice as compared to DMBA/Croton oil control mice. Collectively our findings demonstrated that *Luisia tenuifolia* Blume, which has been traditionally used in Western Ghats, possesses a promising chemopreventive role against skin cancer. However, the therapeutically responsible bioactive phytoconstituent needs to be isolated and further characterized.

Presenter:

Sakthi Priyadarsini. S

SRM Institute of Science and Technology, India



MediXAI System for Predicted Outcome Analysis Using LIME and SHAP for Structured Medical Datasets

Ramyaa Dhinakaran, Kavitha Srinivasan, Mohanavalli S and Mohamed Ajwad

Sri Sivasubramaniya Nadar College of Engineering, India

In the current scenario, an increase in disease rate has created a need for the optimization of the healthcare sector for early diagnosis. The optimization of healthcare has been successful in computer-aided disease diagnosis using Machine Learning (ML) techniques. However, the predicted outcomes using ML models are often interpreted as a black box. This leads to the evolution of Explainable Artificial Intelligence (XAI), which clearly describes the reason for the predicted outcome. This paper addresses the limitations of traditional ML techniques, aiming to understand how the black-box ML models can be interpreted through Local Interpretable Model-agnostic Explanations (LIME) and SHapley Additive exPlanations (SHAP) XAI techniques, specifically designed for structured data. It also compares their effectiveness in interpreting the predictions of Random Forest (RF) and XGBoost (XGB) ensemble ML techniques, using three different structured medical datasets in the healthcare domain, such as breast cancer, diabetes, and stroke datasets. The performance of LIME and SHAP is evaluated in terms of interpretability and transparency by providing clear visual explanations in critical decision-making processes. Among the two ensemble ML techniques analyzed, XGB provides an enhanced accuracy of 99.06\% for breast cancer dataset, whereas for diabetes and stroke datasets, RF provides a better accuracy of 76.76\% and 94.32\% respectively. Furthermore, both LIME and SHAP enhance model transparency and provide valuable insights for healthcare professionals to validate and trust the predicted outcome with a clear visualization.

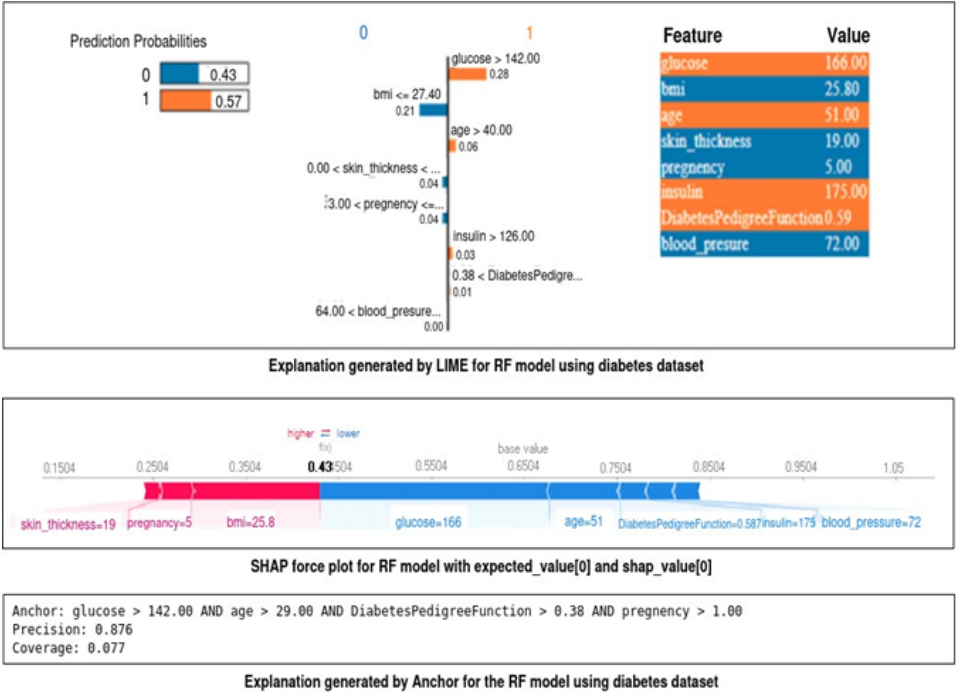


Figure 1: Visual interpretation provided by LIME, SHAP and Anchor XAI tools

Presenter:
D. Ramyaa
Sri Sivasubramaniya Nadar College of Engineering, India



Novel Biosurfactants from *Fictibacillus* Sp.: A Promising Approach for Immuno-Allergen Management

Nagalambika Prasad¹ and **Shivarudraswamy D²**

¹Department of Microbiology, JSS Academy of Higher
Education & Research, India

²Prosetta Bioconfirmatics Pvt. Ltd., India

Microbial biosurfactants have gained considerable attention as sustainable bio-active molecules with diverse biomedical applications. In the present study, a biosurfactant-producing *Fictibacillus* sp. was isolated and evaluated for its potential anti-allergic and immunomodulatory activities. The isolate was screened for biosurfactant production using oil spreading assay, drop collapse assay, emulsification index, and surface tension reduction analysis. The produced biosurfactant was further investigated for its *in vitro* anti-allergic efficacy through histamine inhibition assay, mast cell stabilization assay, cytokine profiling, and cell viability studies.

The biosurfactant demonstrated significant inhibition of histamine release and stabilization of mast cells under induced inflammatory conditions. Cytokine analysis revealed suppression of pro-inflammatory and allergy-associated mediators including TNF- α , IL-4, and IL-6, indicating its immunomodulatory potential. Cell viability assays confirmed the biocompatibility and low cytotoxicity of the biosurfactant at effective concentrations. The findings suggest that biosurfactants derived from *Fictibacillus* sp. may serve as promising natural therapeutic candidates for allergy and inflammation management. This work highlights the potential of microbial biosurfactants as eco-friendly and sustainable biomolecules for future biomedical and pharmaceutical applications.

Presenter:

Nagalambika Prasad

JSS Academy of Higher Education & Research, India



Application of Personalized Allogeneic Bioimplants in Reconstructive Surgery for Charcot Neuro-Osteoarthropathy

A.K. Nazaryan¹, L.T. Volova¹ and S.A. Osnach²

¹Samara State Medical University, Russia

²Vinogradov University Clinical Hospital – Branch of Patrice Lumumba Peoples' Friendship University of Russia (RUDN University), Russia

Objective: To evaluate the clinical efficacy of a two stage technique using personalized 3D printed allogeneic bone blocks for subtotal and total foot defects in diabetic Charcot neuro osteoarthropathy, both in remission and active infection.

Methods: 40 patients (mean age 51.1 years) with midfoot (n=7), hindfoot (n=30) or combined (n=3) defects were treated. Stage 1: radical debridement, antibiotic cement spacer implantation, and external fixation. Stage 2 (6 8 weeks later): spacer removal and insertion of a patient specific 3D allograft (custom milled from a cadaveric bone block using CAD/CAM). Follow up: 12 36 months (mean 21 months).

Results: Overall, good results (bony ankylosis, no instability) were achieved in 72.5% (29/40), satisfactory (implant compaction with neoarthrosis) in 15% (6/40), and poor (non union or osteomyelitis recurrence) in 12.5% (5/40). All midfoot and combined defects showed good outcomes. Hindfoot defects had 60.7% good, 21.4% satisfactory, and 17.9% poor results. Histology of failed allografts revealed bone structure with Haversian canals and stromal vessels but no inflammation.

Conclusion: Personalized 3D allograft reconstruction effectively restores complex foot defects, especially in the midfoot. However, hindfoot reconstruction in high BMI patients requires caution due to axial overload and possible implant collapse. Further refinement of the initial resection technique is needed.

Presenter:

Aikush Karlosovna Nazaryan

Samara State Medical University, Russia



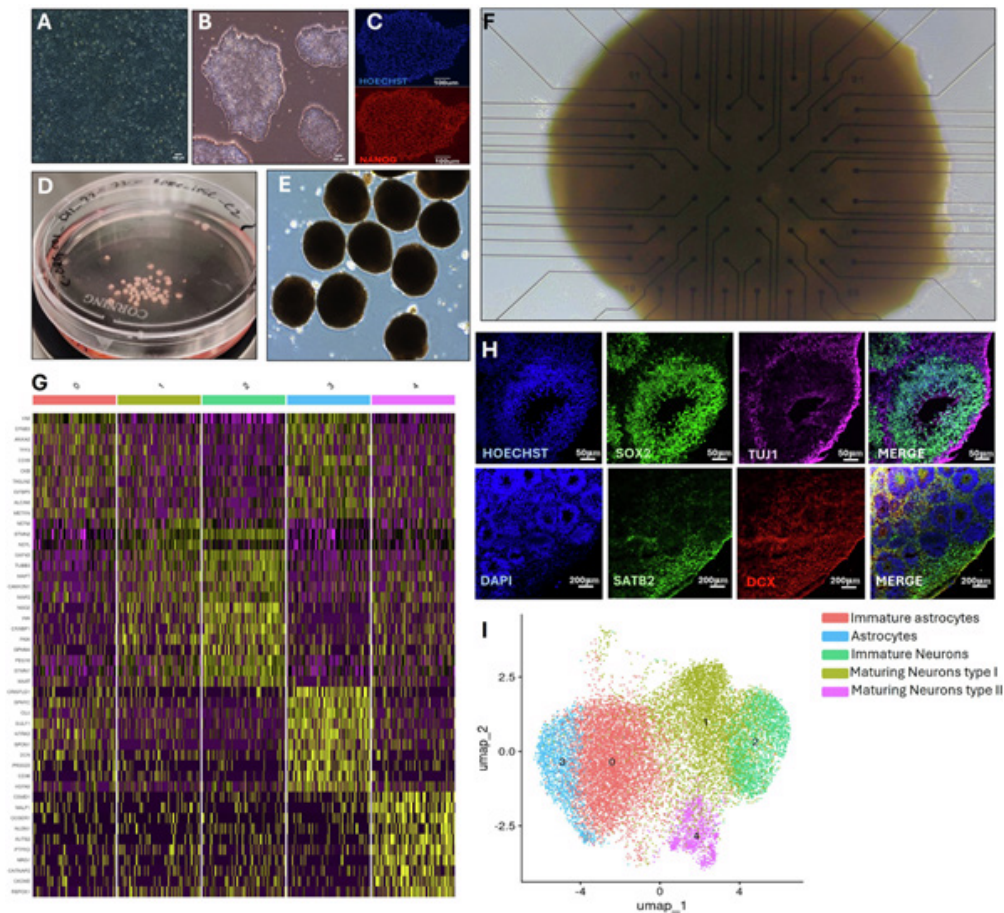
Patient-Derived Brain Organoids Reveal Divergent Neuronal Activity across Subpopulations of Autism Spectrum Disorder

Nisim Perets¹, Liya Kerem², Nir Waiskopf¹ and Ariel Tenenbaum²

¹Itay&Beyond LTD, Israel

²Hadassah Ein Kerem Hospital, Israel

Patient-derived brain organoids have emerged as a powerful model for investigating the mechanisms underlying neurological and psychiatric disorders. They provide novel insights into autism spectrum disorder (ASD), a heterogeneous neurodevelopmental condition whose underlying mechanisms remain poorly understood. Recent advancements in generating electrophysiological functional 3D brain organoids enable the study of molecular and network-level neuronal activity. Here, we aimed to characterize the neurophysiological underpinnings of ASD by comparing the electrophysiological properties of brain organoids derived from 11 individuals diagnosed with autism spectrum disorder (ASD), 10 with monogenic syndromic ASD across 5 genetic subtypes, and 1 with idiopathic ASD, with those derived from 4 neurotypical control individuals. We identified distinct differences in baseline activity (resting state) and evoked responses (synaptic plasticity and network dynamics) across ASD subgroups. To comprehensively assess these differences, we applied dimensionality reduction (principal component analysis, PCA) to integrate multiple electrophysiological features into a unified framework. Our findings reveal subtype-specific neurophysiological alterations in ASD brain organoids, offering mechanistic insights into ASD heterogeneity and potential applications for early diagnostics, drug screening, and therapeutic development.



Presenter:
Nisim Perets
Itay & Beyond LTD, Israel



Efficacy of Photobiomodulation Therapy in Restoring Thyroid Function and Volume in Autoimmune Hashimoto Thyroiditis

Venera Berisha-Muharremi

Faculty of Medicine, University of Prishtina, Kosovo.
Poliklinika Endomedica, Kosovo.
Endocrinology Clinic, University Clinical Center of Kosovo,
Kosovo.

Background and Objectives: Hashimoto's thyroiditis (HT) is a chronic autoimmune thyroid disorder that commonly progresses to hypothyroidism, including in individuals with adequate iodine intake. While levothyroxine (LT4) therapy often achieves biochemical euthyroidism, many patients continue to experience persistent symptoms, likely driven by ongoing autoimmune inflammation. Photobiomodulation (PBM) has demonstrated anti-inflammatory and immunomodulatory effects in various autoimmune and endocrine conditions; however, its influence on thyroid volume (TV) and functional outcomes remains insufficiently characterised. This study aimed to evaluate the clinical and biochemical efficacy of low-fluence PBM, delivered using defined laser parameters, in combination with nutritional supplementation, compared with supplementation alone.

Methods: Ninety-eight women aged 20–50 years diagnosed with HT were allocated into two groups. Group 1 received PBM in addition to supplementation, while Group 2 received supplementation only. PBM was administered using an 820 nm diode laser at 200 mW output in continuous wave mode, applied for 20 seconds per point across eight thyroid points (32 J/cm² per point), twice weekly for three consecutive weeks. Both groups received oral selenium (100 µg/day) and vitamin D₃ supplementation when serum levels were below 40 ng/dL.

Results: Ninety-seven participants completed the study (Group 1: n=51; Group 2: n=46) for 12 months. The PBM group demonstrated significantly greater improvements in thyroid volume normalisation, body weight, BMI, waist and hip circumferences, waist-to-hip ratio, serum TSH, anti-TPO and anti-TG antibodies, as well as a reduction in LT4 dosage compared with the supplementation-only group ($p<0.05$).

Conclusions: Low-fluence PBM, delivered with specific laser parameters and combined with targeted supplementation, appears to be a safe and effective adjunctive therapy in HT, improving thyroid morphology, function, and clinical outcomes. No adverse events or treatment-related complications were reported during the study period. These findings support further investigation in larger, controlled trials and highlight the potential role of PBM within integrative thyroid care.

Presenter:

Venera Berisha-Muharremi

University of Prishtina, Kosovo

Poliklinika Endomedica, Kosovo

University Clinical Center of Kosovo, Kosovo.



The Origins of Anti-Vax Beliefs

Nicky Hayes

Independent Psychologist, Visiting Professor, University of Suffolk, UK

This paper discusses how the value that we place on different information sources has changed in modern times, and how the dynamics of social media algorithms and artificial intelligence systems have influenced people's access to, and acceptance of, certain kinds of information. The outcome is a multiplicity of world-views and a significant growth of conspiracy theories, which in some cases directly challenge health recommendations, particularly vaccination. The paper explores how the two psychological processes of social representation and social identification determine how we acquire and evaluate social knowledge, and how they can help us to understand why this has happened.

Presenter:

Nicky Hayes

University of Suffolk, UK



Timing Matters: An Observational Study on Circadian Effects of Spinal Anesthesia in Cesarean Delivery

Evangelia Nikouli¹, Nikoleta Koutlaki², Kostas Anagnostopoulos³, Christina Tsigalou⁴ and Pelagia Chloropoulou⁵

¹Department of Anaesthesiology, General Hospital of Komotini, Greece

²Department of Obstetrics and Gynaecology, Faculty of Medicine, Democritus University of Thrace, Greece

³Laboratory of Biochemistry, Faculty of Medicine, Democritus University of Thrace, Greece

⁴Laboratory of Hygiene and Environmental Protection, Department of Medicine, Democritus University of Thrace, Greece

⁵Department of Anesthesiology, Alexandroupolis University Hospital, Democritus University of Thrace, Greece

Background: The timing of anesthesia administration may affect drug efficacy and recovery outcomes. Understanding these variations is important for optimizing anesthetic care.

Aim: To assess how spinal anesthesia timing affects block duration, postoperative pain, and CRP and cortisol levels in cesarean deliveries.

Methods: Ninety women were divided into three groups based on spinal anesthesia timing: Group A (08:00–16:00), Group B (16:00–00:00), and Group C (00:00–08:00). Standardized spinal anesthesia was administered. Sensory/motor blockade and pain (NRS) were assessed every 10 min. Blood samples for CRP and cortisol were collected preoperatively and at 2, 4, 24, and 48 h post operation.

Results: Group C showed shorter sensory and motor blockade than Groups A and B ($p < 0.05$). The time to first analgesic request was longest in Group A, while Group C reported the highest pain scores ($p < 0.05$). CRP levels were significantly higher in Group B vs. Group A at 24 and 48 h, and vs. Group C at 48 h ($p < 0.05$). Group B demonstrated the steepest CRP velocity, indicating a more rapid physiological stress response. BMI differences may have influenced biomarker dynamics.

Conclusions: Spinal anesthesia timing significantly impacts block duration, pain experience, and the rate of the physiological stress response. CRP velocity may offer additional insights into perioperative inflammation. Circadian considerations should be integrated into anesthetic planning for cesarean deliveries.

Presenter:

Evangelia Nikouli

General Hospital of Komotini, Greece



Integrating Acute Flaccid Paralysis Surveillance, Environmental Surveillance and Vaccination Strategies to Prevent Poliovirus Re-Emergence in Nigeria: A Narrative Review

Eric Okorie Nwaze¹ and Matthew Ashikeni²

¹Department of Community Medicine, David Umahi Federal University of Health Sciences, Nigeria

²Department of Community Medicine, Baze University, Nigeria

Background: Nigeria's interruption of wild poliovirus transmission remains a major public health achievement, but the country remains vulnerable to poliovirus re-emergence because of immunity gaps, circulating vaccine-derived poliovirus events, population movement, conflict-affected settlements and uneven routine immunisation performance. This narrative review examined how acute flaccid paralysis surveillance, environmental surveillance and vaccination strategies can be integrated to strengthen early detection and prevention of poliovirus re-emergence in Nigeria.

Methods: The review synthesised evidence from peer-reviewed literature, programme reports and global polio eradication guidance relating to Nigeria's surveillance and immunisation system. Emphasis was placed on the complementary roles of case-based acute flaccid paralysis reporting, sewage-based environmental sampling, outbreak response immunisation, routine immunisation strengthening, microplanning, data use and cross-border coordination.

Results: Acute flaccid paralysis surveillance remains indispensable for detecting suspected poliomyelitis and monitoring field performance, but it is limited by under-reporting, delayed investigation and access constraints in some communities. Environmental surveillance complements case-based surveillance by detecting silent poliovirus circulation before paralytic cases occur, particularly in densely populated urban areas and high-risk transmission corridors. Vaccination strategies, including high-quality supplementary immunisation activities, targeted campaigns, improved routine immunisation and the strategic use of oral and inactivated poliovirus vaccines, are essential to close immunity gaps. The review found that the greatest preventive value lies in synchronising surveillance signals with rapid, geographically targeted immunisation responses, supported by real-time data analysis, community engagement, laboratory capacity and accountability mechanisms.

Conclusion: Preventing poliovirus re-emergence in Nigeria requires an integrated system in which acute flaccid paralysis surveillance, environmental surveillance and vaccination strategies operate as mutually reinforcing components. Sustained political commitment, resilient primary health care, cross-border col-

laboration and precision immunisation in underserved populations are critical for protecting Nigeria's polio-free status and advancing global eradication.

Presenter:

Eric Okorie Nwaze

David Umahi Federal University of Health Sciences, Nigeria



Integrated Surveillance of Polio-Negative Acute Flaccid Paralysis Cases for Childhood Tuberculosis: A Novel GeneXpert-Based Screening Approach in Rivers State, Nigeria

Nwadiuto Ifeoma¹, Oris-Onyiri Victor², Owhonda Golden¹, Abdulganiyu Giwa², Okafor Chinenye², Ezekwe Bosede², Umogbai Deborah², Eze Philip², Ekpoudom Ayakeme², Olufunmilola Kolude², Abiikor Victor³ and Oreh Adaeze³

¹Department of Community Medicine, Rivers State University, Nigeria

²World Health Organization, Nigeria

³Rivers State Ministry of Health, Nigeria

Background: Nigeria was certified free of indigenous wild poliovirus transmission in 2020; however, acute flaccid paralysis (AFP) surveillance remains operational to detect poliovirus re-emergence. Meanwhile, tuberculosis (TB) continues to contribute significantly to childhood morbidity, yet TB diagnosis is often delayed due to non-specific clinical presentations and limited access to bacteriological confirmation. Extrapulmonary TB forms (e.g., tuberculous meningitis and spinal TB) may present with limb weakness or paralysis, mimicking poliovirus-associated AFP. Integrating TB testing into AFP surveillance may therefore improve childhood TB case detection.

Methods: We conducted a retrospective analysis of integrated AFP–TB surveillance data collected from January 2022 to March 2025 in Rivers State, Nigeria. Of 147 AFP cases reported among children <15 years, poliovirus-positive cases and those with inadequate stool specimens were excluded. The remaining 118 polio-negative AFP cases underwent stool GeneXpert MTB/RIF testing. The primary outcome was stool GeneXpert positivity for *Mycobacterium tuberculosis* complex.

Results: Five of 118 children had positive stool GeneXpert MTB/RIF results (positivity rate 4.2%; 95% CI: 1.6–9.6%). Four of the five positive cases were <5 years old. Three results were reported as “trace detected, rifampicin resistance indeterminate.” All GeneXpert-positive children presented with acute limb weakness or paralysis and were successfully linked to the National Tuberculosis Programme for further evaluation and management. Data completeness was 100% for age, sex, local government area, and GeneXpert result.

Conclusion: Stool GeneXpert testing integrated into AFP surveillance was operationally feasible and identified additional children with microbiological evidence of *M. tuberculosis* DNA. Although GeneXpert positivity does not confirm active TB disease, this approach shows promise for strengthening childhood

TB case-finding in high-burden settings. Larger studies should include clinical confirmation, treatment outcomes, and economic evaluation.

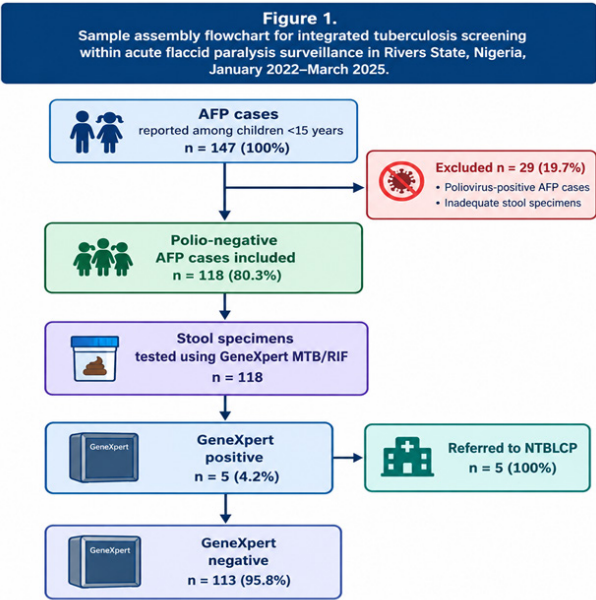


Table 1. Demographic characteristics of AFP cases by GeneXpert status

Variable	GeneXpert-positive (n=5)	GeneXpert-negative (n=113)
Age (months), median (IQR)	51 (16–56)	27 (16–59)
Sex, n (%)		
Female	3 (60.0%)	53 (46.9%)
Male	2 (40.0%)	60 (53.1%)

Presenter:
Ifeoma Nwadiuto
Rivers State University, Nigeria



Patient with MGRS/PGNMID without Detection of a Peripheral Clone: Case Report and Literature Review

Agatha Larrazábal¹, Ana Ávila-Rodríguez² and Matías Sánchez²

¹Department of Hematology at Fundación Arturo López Pérez (FALP), Chile

²Assistant Professor, Department of Medicine, Division Hematology/Oncology University of Illinois Chicago-UI Health, USA

Monoclonal gammopathy of renal significance (MGRS) is a clonal cell proliferative disorder, characterized by the production of monoclonal immunoglobulins in patients that don't meet hematologic criteria for a specific malignancy. It can be present in B and plasma cell clonal proliferative diseases and accounts for 10% of Monoclonal Gammopathy of Undetermined Significance (MGUS) cases.

We present a case of a 61 year old female with relevant past medical history of hyperlipidemia, well controlled hypertension and smoking; who consults in the nephrology clinic referring 2 weeks of increased generalized grade 2+ pitting edema with progressive dyspnea of exertion compatible with NYHA IV. Physical examination with anasarca, bilateral leg edema grade 2+ pitting up to knee, and bilateral basal pulmonary rales.

Baseline creatinine of 1mg/dl, however labs at admission showed acute renal injury (AKI) KDIGO IIIB, with creatinine of 6.59mg/dl, BUN 63mg/dl, proteinuria of 10.3g/dl and hematuria +3; also moderate hyponatremia with sodium of 126mg/dl. Rest of exams on admission were unremarkable.

Table 1: Further exams done in the following days after admission.

INVESTIGATION	FINDINGS
Kidney Biopsy	MPGN pattern of injury and immunofluorescence (Strong diffuse global mainly peripheral C3, C1q, IgG kappa light chains and trace IgM, IgG3 subtype) supporting diagnosis of Proliferative Glomerulonephritis with Monoclonal Immunoglobulin Deposits (PGNMID) / Monoclonal gammopathy of renal significance (MGRS).
Bone Marrow Biopsy	Normal maturation of 3 lineages, plasma cells not increased and with no atypical features. Kappa ISH and lambda ISH show a polyclonal pattern. Normal BM karyotype and FISH.
Autoimmune and complement testing	Negative ANA, anti-GBM, PR3, MPO, anti-cardiolipin (IgM, IgG, IgA), anti-β2 glycoprotein, and lupus anticoagulant. Complement levels (C3 and C4) were within normal limits.
Serum and Urine immunofixation (SIFE and UIFE)	No monoclonal protein detected on SIFE or UIFE.
Serum Free Light Chains	Kappa/lambda free light chain ratio within the normal range at 1.68.

She received pulse steroids (methylprednisolone 250mg IV for 3 consecutive days) diuretics and antiproteinuric medications. Renal replacement therapy was necessary for management of fluid overload.

After the diagnosis of PGNMID/MGRS she was initiated on Daratumumab-VCD regimen: SQ Daratumumab (1800mg fixed dose), SQ Bortezomib (1.3mg/m²), oral Cyclophosphamide (1.5mg per m²), and Dexamethasone 40mg weekly.

The patient showed a rapid biochemical response. Serum creatinine decreased from 10.73 mg/dL to 2.19 mg/dL within the first 30 days of treatment.

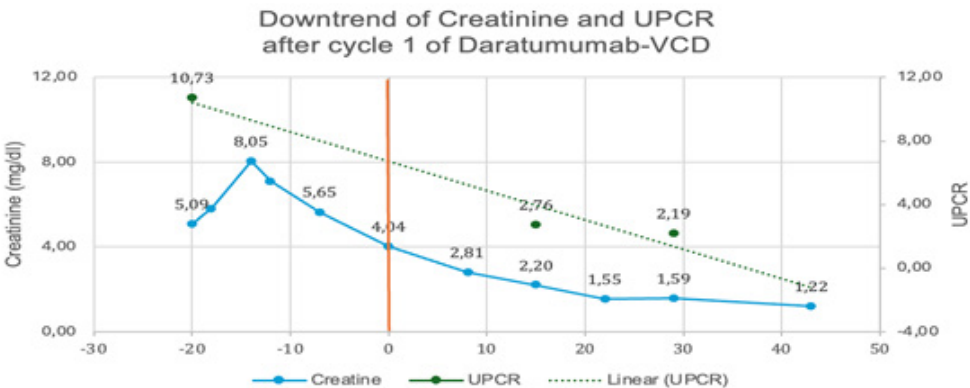


Figure 1: Downtrend of creatinine and proteinuria/creatinuria ratio (UPCR) after initiation of cycle 1 of Daratumumab + VCD chemoimmunotherapy.

Our patient was treated according to her diagnosis, with a combination of conservative therapy and chemoimmunotherapy. Clone-directed therapy has demonstrated high hematologic and renal response rates in similar patients with MGRS diagnosis.

Presenter:

Agatha Graziella Larrazábal Carrillo

Department of Hematology at Fundación Arturo López Pérez (FALP), Chile



Epidemiological Profile and Temporal Trend Analysis of Osteomyelitis at a Teaching Hospital

Gabriel Moreira Accetta, Fernando Santos Botelho and Ricardo de Souza Cavalcante

Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil

Osteomyelitis represents a significant cause of morbidity in children and adults, both community-acquired and healthcare-associated. To improve knowledge about the epidemiology of this infection and contribute to better clinical management, this study aimed to evaluate the epidemiological profile and temporal trend of osteomyelitis in patients treated at the Hospital das Clínicas of the Faculty of Medicine of Botucatu –UNESP (HCFMB). For this purpose, a retrospective cohort of 543 patients with osteomyelitis, hospitalized between January 2013 and December 2022 at HCFMB, was analyzed. All hospitalized patients over 18 years of age who had a laboratory-confirmed diagnosis of osteomyelitis were included, i.e., with at least one positive bone fragment culture, regardless of the microorganism identified, collected based on clinical suspicion of infection. Categorical variables were compared using the Chi-square or Fisher's exact test. Temporal trend analyses were performed using the segmented regression method (Joinpoint). Variables with p-values less than 0.05 were considered significant. There was a predominance of male patients with a median age of 59 years. The main factors leading to osteomyelitis in this cohort were diabetic foot, surgery, trauma, and pressure ulcers. Enterobacteriaceae were the most frequently isolated agents in bone culture (38.3%), followed by *Staphylococcus aureus* (19.5%), coagulase-negative *Staphylococcus* (18.2%), *Enterococcus* spp. (16.8%), *Pseudomonas aeruginosa* (13.1%), and *Acinetobacter baumannii* (4.2%). A polymicrobial cause of osteomyelitis was identified in 21.0% of patients. The antimicrobial resistance rate was 52.4%. were more prevalent in all types of osteomyelitis, except for hematogenous osteomyelitis, in which *S. aureus* predominated. An increase in the incidence density of enterobacterial infections [APC = 8.16 (95% CI 1.12 – 17.81), $p=0.02$] as a cause of osteomyelitis was observed. An increase in antimicrobial resistance was also observed between 2013 and 2019 [APC = 16.19 (95% CI 1.98 – 343.69), $p=0.03$]. These findings indicate a change in the classic profile of osteomyelitis, with a substantial increase in enterobacterial infection and a significant increase in antimicrobial resistance.

Presenter:

Gabriel Moreira Accetta

Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil



Liposome-Encapsulated Antibiotics for the Therapy of Mycobacterial Infections

Nejat Düzgüneş¹, Metin Yıldırım² and Kameswari Konduri³

¹Department of Biomedical Sciences, University of the Pacific School of Dentistry, USA

²Department of Biochemistry, Harran University, Turkey

³VGSK Technologies, USA

About a quarter of the world's population is infected with *Mycobacterium tuberculosis*. Growing antibiotic resistance by this microorganism is a major problem in the therapy of the disease. *M. avium-M. intracellulare* that emerged as a major opportunistic infection of HIV/AIDS continues to afflict immunocompromised individuals. We describe the use of liposome-encapsulated antibiotics in the experimental and clinical therapy of mycobacterial infections, as well as recent experimental liposomal vaccines against tuberculosis. Liposome-mediated intravenous or inhalational delivery of antibiotics enhances the antibacterial effects of the drugs, particularly for infections of resident macrophages, where the liposomes are passively targeted. Despite experimental successes of liposomal antibiotics in the treatment of mycobacterial and other bacterial infections, applications of this method to the clinic have been lagging. In a different application, we have shown the effective treatment of experimental asthma with weekly inhalational administration of budesonide in sterically stabilized liposomes.

Presenter:

Nejat Düzgüneş

University of the Pacific School of Dentistry, USA



The Role of Histone Deacetylase Isoform in Modulating Immune Checkpoint Therapy Effectiveness

Ravi P. Sahu¹, Mariam K. Alamoudi², Abdulmonem A. Alsaleh³, Anita Thyagarajan¹, Faisal K. Alkholifi² and Muhammad Liaquat Raza^{4,5}

¹Department of Pharmacology and Toxicology, Boonshoft School of Medicine, Wright State University, USA

²Department of Pharmacology, College of Pharmacy, Prince Sattam Bin Abdulaziz University, Saudi Arabia

³Department of Blood and Cancer Research, King Abdullah International Medical Research Center (KAIMRC), King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), Ministry of National Guard-Health Affairs (MNG-HA), Saudi Arabia

⁴Department of Infection Prevention & Control, Ministry of National Guard Health Affairs (MNG-HA), Saudi Arabia

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While multiple therapeutic options exist for melanoma, their overall response rates remain low in many patients due to counter-regulatory mechanisms. This underscores the need to understand the underlying mechanisms and develop alternative strategies to enhance the effectiveness of melanoma therapies. As negative immune checkpoint (IC) molecules exploit tolerance mechanisms to promote tumor immune evasion, immune checkpoint inhibitors (ICIs) have therefore been extensively explored for melanoma treatment. Although initial antitumor responses are often promising, resistance frequently develops, reflecting interference from intrinsic tumor characteristics and an immunosuppressive tumor microenvironment (TME). An inflamed TME is associated with improved ICI efficacy through upregulation of T-cell-inflamed TME gene signatures, which include genes linked to dendritic cells and cytotoxic CD8⁺ T-cell-mediated antitumor responses. Histone deacetylases (HDACs) regulate gene expression and aberrant HDAC expression has been reported in melanoma, including potential regulation of IC. To that end, using genomic databases such as the skin cutaneous melanoma (SKCM) database, and ICI-pretreated melanoma dataset, we investigated mechanisms underlying reduced ICI efficacy. Our analyses revealed increased expression of HDAC4 alongside decreased expression of T-cell-inflamed TME gene signatures. The group of melanoma patients with elevated HDAC4 expression not only exhibited poor prognosis, but also reduced transcription of T-cell-inflamed TME gene signatures, and increased DNA methylation of these genes. Notably, high HDAC4 was also associ-

ated with decreased CD8+ T infiltration and lower immune scores in ICI-treated melanoma patients. While these findings require further validation, they suggest that targeting HDAC4 may help overcome resistance mechanisms and improve ICI efficacy.

Presenter:

Ravi P. Sahu

Wright State University, USA



The Humanized Anti-CitH3 Antibody for Sepsis: Preclinical Efficacy and Translational Potential

Chao Quan¹, Wenlu Ouyang¹, Tao Dong¹, Jianjie Ma² and Yongqing Li¹

¹Department of Surgery, University of Michigan Medicine, USA

²Department of Surgery, University of Virginia, USA

Sepsis remains a major cause of mortality worldwide, driven by dysregulated host immune responses that lead to systemic inflammation, multiorgan dysfunction, and organ failure. Citrullinated histone H3 (CitH3), released during neutrophil extracellular trap (NET) formation, has emerged as an early pathogenic mediator of sepsis-associated tissue injury. Based on this rationale, we evaluated the therapeutic efficacy, pharmacokinetics/pharmacodynamics (PK/PD), and safety of a first-in-class humanized anti-CitH3 monoclonal antibody (hCitH3-mAb) to support its clinical translation.

Preclinical efficacy was assessed in clinically relevant murine models of sepsis, including lipopolysaccharide (LPS) challenge, *Pseudomonas aeruginosa* infection, and cecal ligation and puncture (CLP). hCitH3-mAb significantly improved survival, reduced acute lung and kidney injury, attenuated systemic cytokine storm, and lowered bacterial burden across multiple organs. Circulating CitH3 levels, measured in septic mice and patients with sepsis using a pre-equilibrium digital ELISA (PEdELISA) platform, increased early in disease and correlated with severity.

Mechanistically, CitH3 activated Toll-like receptor 2 (TLR2), triggering Ca²⁺-dependent PAD2 auto-citrullination and nuclear translocation, thereby amplifying CitH3 production through a pathogenic positive-feedback loop; CitH3 also induced pyroptosis in immune cells, further exacerbating inflammatory injury during sepsis. hCitH3-mAb disrupted this inflammatory amplification, reduced excessive innate immune activation, restored macrophage function, and improved host defense during sepsis.

To support clinical translation, PK and GLP-compliant repeat-dose toxicology studies were conducted in rodents and cynomolgus monkeys. hCitH3-mAb showed favorable tolerability, with a no-observed-adverse-effect level (NOAEL) of 200 mg/kg. In cynomolgus monkeys, dose-dependent exposure was observed, with terminal half-lives of 76.7 hours at 30 mg/kg and 47.7 hours at 200 mg/kg, supporting clinically feasible dosing.

Together, these findings establish CitH3 as a druggable target in sepsis and support hCitH3-mAb for first-in-human clinical evaluation, with FDA IND approval obtained for Phase I/IIa trials.

Presenter:

Chao Quan

University of Michigan Medicine, USA



Investigating Sick Building Syndrome in Urban Residential Buildings in Tehran: A Statistical and Predictive Modeling Approach

Negin Hamidi, Mozghan Karimi, Marjan Ilbeigi, Hoda Ranjbar, Elham Javaheri, Maryam Keynezhad, Nima Shiva, Mohammad Erfan Antikchi and Afroditi Barjani

The University of Oklahoma, USA

The indoor environment of buildings plays a crucial role in influencing the well-being of occupants. However, the impact of different building types on residents' health remains underexplored. This study investigates the relationship between building types and occupants' health and comfort, with a focus on identifying design parameters that mitigate Sick Building Syndrome (SBS). The influence of building height on health outcomes was also assessed. A comprehensive quantitative approach was adopted, collecting survey data from residents in Tehran, Iran. Statistical analysis was conducted using SPSS, and predictive models were developed using Artificial Neural Networks (ANN). The results revealed significant correlations between building type and SBS symptoms, with 36.30% of residents in high-rise buildings reporting itchy or watery eyes. In contrast, 66.57% of participants preferred living in villa buildings, with only 19.42% favoring high-rise buildings and 11.92% opting for apartments with up to 10 units. Comfort levels were highest in villa buildings, and comfort decreased with increasing building height, particularly in terms of heating, cooling, and ventilation. ANN modeling was used to explore whether residents' preferences for building types could be predicted from demographic and environmental variables, with high accuracy in predicting villa-type preferences. These findings underscore the importance of considering occupants' physical and mental well-being in architectural designs. Incorporating user preferences for healthy indoor environments can help architects create spaces that enhance both comfort and health, contributing to better living experiences.

Presenter:

Negin Hamidi

The University of Oklahoma, USA



Pathogenic Strains of a Pathobiont Gut Bacterium Induces Systemic Thrombo-Inflammatory Pathways in an Endotype of Lupus Nephritis

Gregg Silverman

NYU Grossman School of medicine, USA

For more than a century, bacterial infections have been implicated as triggers of autoimmune syndromes, that include rheumatic fever and post-streptococcal glomerulonephritis. However, only recently have imbalances within our microbiota communities been considered.

Our investigations of intestinal communities have shown that, unlike in healthy individual, lupus patients commonly exhibit community-wide ecological microbiota instability, and are often affected by intestinal expansions (or blooms) of the commensal, *Ruminococcus (Mediterraneibacter) gnavus* (Rg), which was found during high-disease activity in about half of LN patients. Pathogenic Rg strains expressed a novel bacterial lipoglycan, with conserved structural features by mass spectroscopy.

To investigate pathogenesis, compared bulk RNAseq libraries were made from blood collected at time of disease flares. LN with Rg blooms had significant inductions of platelet and neutrophil activation transcripts, while the other LN patients had predominant B cell activation and immune complex mediated pathways.

We used the same commercial proteomics assay used in earlier high-dimensional discovery studies of self-proteins in urine from LN patients to develop a “liquid biopsy”. In contrast, we custom-designed a multiplex array to detect 30 human proteins that included proteins implicated in platelet-associated thrombo-inflammation and neutrophil extracellular TRAPs/NETosis. LN patients with Rg blooms and high serum anti-lipoglycan antibodies also had raised urine levels of proteins from platelets, neutrophils and endothelial cells, which were not detected in other LN patients. *In vivo* murine challenge studies reiterated these findings.

These data support the hypothesis that platelet & neutrophil-related pathways contribute to LN activity during Rg blooms. We postulate these patients have a previously unrecognized endotype of LN in which renal exposure to either the Rg lipoglycan, or the induced antibodies to lipoglycan, or other Rg factor(s), may contribute to glomerular injury through pathways of thrombo-inflammation.

Furthermore, identification of a LN endotype associated with the gut microbiome may suggest therapeutic interventions beyond immunosuppressants commonly used to treat LN, may now include treatment with a selective antibiotic.

Presenter:

Gregg Silverman

NYU Grossman School of Medicine, USA



Macroscopic Markers and Immune Phases of Dolphins Healing Shark Bites at Sea

Ann Weaver

Good-Natured Statistics Consulting, LLC, USA
Maples Center for Forensic Medicine, University of Florida
College of Medicine, USA

Free-ranging dolphins heal severe wounds at sea like shark bites without medical intervention and without infection despite weeks of exposure to microbial-infested seas before wounds seal. This is a compelling distinction from human wounds that require extensive medical intervention to avoid infection. The problem is the dearth of data on how dolphin healing avoids infection and how this might inform human healing. The objective was to document patterns of unaided healing on dolphins recuperating at sea from shark bites. Methods involved year-round small-boat surveys of a 10.4-km/6.5 mi stretch of the Boca Ciega intra-coastal waterway in St. Petersburg, FL, USA, from 2004-2024 to collect intensive behavioural and photographic data of N = 487 free-ranging bottlenose dolphins, *Tursiops truncatus*, federal NOAA permits 1088-1815, 16299, 20346, 25957. Results from 107 dolphins with fresh or semi-fresh shark wounds, including two cases whose days of healing days were known precisely, verified that unaided wound healing at sea involves two consecutive macroscopic pigment patterns, wounds form preliminary seals by 4–8 weeks, and most heal to atrophic scars that remodel for years. The two macroscopic markers of bottlenose dolphin healing match macroscopic and underlying immune patterns in stranded Fraser's dolphins (*Lagenodelphis hosei*). Conclusions are that it is plausible that the first (dark to-light) pigment pattern is a macroscopic marker of overlapping inflammation and proliferation, cellular debris serves as a soft scab, the second (light-to-dark) pigment pattern is a macroscopic marker of late proliferation and remodeling, and both inflammation and remodeling are prolonged. The significance is this that is the first study to link healing-related pigment patterns on dolphins recuperating unaided at sea to underlying immune activities. Macroscopic markers of unaided healing of dolphin wounds could lead to novel therapies in veterinary and human regenerative medicine.

Presenter:

Ann Weaver

Good-Natured Statistics Consulting, LLC, USA
University of Florida College of Medicine, USA



Expanding Immunization Access through Non-Traditional Settings: An Interprofessional Model for HPV Vaccine Delivery in Dental Care

Ana Neumann¹, Daisy Mullassery², Tulsı Patel¹ and Anita Joy-Thomas¹

¹UTHealth Houston School of Dentistry, USA

²UTHealth Houston Cizik School of Nursing, USA

Human papillomavirus (HPV) vaccination is a highly effective strategy for preventing HPV-associated cancers; however, vaccination coverage remains sub-optimal. This study aimed to evaluate opportunities to expand HPV vaccine uptake through non-traditional healthcare settings and to describe an interprofessional model for vaccine delivery in dental care.

A cross-sectional assessment was conducted among pediatric dental patients (ages 9–18) in a dental academic institution to evaluate vaccination status, willingness to receive the vaccine in a dental setting, and perceived barriers. Findings informed the development of an interprofessional care model integrating dental and nursing workflows.

Among 400 patients, 54.5% had not completed the HPV vaccine series. Notably, 21% of parents of unvaccinated children expressed willingness to initiate vaccination if offered during a dental visit, indicating a significant opportunity to expand access. The most commonly reported barrier was preference for receiving vaccination in a physician's office (43.6%), while fewer parents cited safety concerns (8.1%) or religious objections (5.2%). Lower vaccination coverage was observed among younger patients and males ($p < 0.05$).

These findings support the integration of immunization services into dental settings through interprofessional collaboration, clinical workflow adaptation, and preventive care alignment. Expanding vaccination delivery to dental care represents a scalable strategy to improve vaccine uptake and advance HPV-related cancer prevention.

Presenter:

Ana C Candia Solari Neumann

UTHealth Houston School of Dentistry, USA



Inhibition of Pathogenic Bacterial Growth Using Secondary Metabolites Obtained from Plant Extracts

Lorena Fernanda Ortega García, Rocío Pérez y Terrón, Ángel Palillero Cisneros, César Antonio Sandoval Ruiz and Rosa Emilia Pérez Pérez

Meritorious Autonomous University of Puebla, México

Antimicrobial resistance has increased the need to explore natural antimicrobial alternatives. This study evaluated the inhibitory effect of plant extracts from *Mentha piperita*, *Cinnamomum verum*, *Camellia sinensis* and *Bougainvillea glabra* against *Staphylococcus aureus* and *Yersinia enterocolitica*, as well as the secondary metabolites associated with their activity. Commercial plant material was extracted by maceration in a hydroalcoholic solution, followed by alcohol removal under reduced pressure and sterile filtration. Bacterial inocula were standardized to 1×10^8 CFU/ml by drop plate counting and optical density adjustment at 625 nm. Growth inhibition was assessed in liquid LB medium for 24 h, antibiotic susceptibility was evaluated by disk diffusion, and phytochemical screening, liquid-liquid extraction, thin-layer chromatography, FTIR and ^1H NMR were used for chemical characterization. The extracts showed different inhibitory capacities depending on the plant and bacterial species. *Mentha piperita* showed the highest activity, inhibiting *S. aureus* by 96.04 % and *Y. enterocolitica* by 91.83 %, followed by *C. verum*, which inhibited *S. aureus* by 77.77 % but showed lower activity against *Y. enterocolitica* (14.23 %). *Camellia sinensis* and *B. glabra* showed lower inhibition, and the optical density of green tea treatments suggested possible interference by soluble pigments. The antibiogram revealed distinct resistance profiles: *S. aureus* was resistant to amikacin, ampicillin and dicloxacillin, whereas *Y. enterocolitica* was resistant to ampicillin, cephalothin, dicloxacillin and penicillin. Phytochemical tests revealed coumarins, quinones, terpenes, sesquiterpene lactones, saponins and reducing sugars. Liquid-liquid extraction of *M. piperita* identified the acetonitrile fraction as the most active, with 92.02 % inhibition against *S. aureus* and 75.91 % against *Y. enterocolitica*. FTIR and ^1H NMR analysis of AN-01 suggested a compound compatible with menthyl acetate or a related derivative. These results support *M. piperita* as a promising source of antimicrobial metabolites.

Presenter:

Lorena Fernanda Ortega García

Meritorious Autonomous University of Puebla, México



Coordinated Interferon, Cytolytic, Antigen-Presentation and Checkpoint Programs Define Immune-Inflamed Phenotypes in Treatment-Naive Nasopharyngeal Carcinoma

Y. Lee and J.C. Park

Department of Medicine, MGH - Massachusetts General Hospital, USA

Background: Nasopharyngeal carcinoma (NPC) is an Epstein-Barr virus-associated malignancy with immune-rich but heterogeneous tumor microenvironments. Although immune checkpoint blockade benefits some patients, resistance remains common, suggesting that immune activation alone may not fully define treatment-relevant immune states. We evaluated whether treatment-naive NPC transcriptomes identify coordinated immune-inflamed phenotypes marked by host-response/interferon signaling, cytolytic activity, antigen presentation, checkpoint/exhaustion, and suppressive tumor microenvironment programs.

Methods: GSE102349 bulk transcriptomic data from 113 treatment-naive NPC tumors were analyzed. Gene-wise z-score normalized expression values were used to score EBV/host-response, IFN/antiviral signaling, cytolytic activity, checkpoint/exhaustion, antigen-presentation, and suppressive tumor microenvironment signatures. A composite immune-response score was calculated from EBV/host-response, IFN/antiviral, and cytolytic activity signatures. Tumors were classified as immune-response-high or immune-response-low using the cohort median composite score. Group differences were assessed using Wilcoxon rank-sum testing with Benjamini-Hochberg false discovery rate correction.

Results: Among 113 NPC tumors, median stratification of the composite immune-response score classified 57 tumors as immune-response-high and 56 as immune-response-low. Immune-response-high tumors showed higher IFN/antiviral signaling (mean z-score 0.629 vs -0.640; FDR 1.73e-18), EBV/host-response signaling (0.570 vs -0.581; FDR 1.40e-13), cytolytic activity (0.568 vs -0.578; FDR 3.30e-12), checkpoint/exhaustion (0.515 vs -0.525; FDR 1.13e-13), antigen presentation (0.522 vs -0.531; FDR 1.89e-12), and suppressive tumor microenvironment signatures (0.436 vs -0.444; FDR 1.89e-12). This immune-inflamed phenotype was marked by enrichment of checkpoint/exhaustion-associated genes, including LAG3, HAVCR2/TIM3, IDO1, TIGIT, PDCD1/PD-1, CTLA4, CD274/PD-L1, and TOX, together with antigen-presentation genes including TAP1, TAP2, B2M, and HLA-A/B/C.

Conclusions: Treatment-naive NPC transcriptomes identify an immune-inflamed phenotype characterized by coordinated host-response/interferon, cytolytic, antigen-presentation, checkpoint/exhaustion, and suppressive tumor

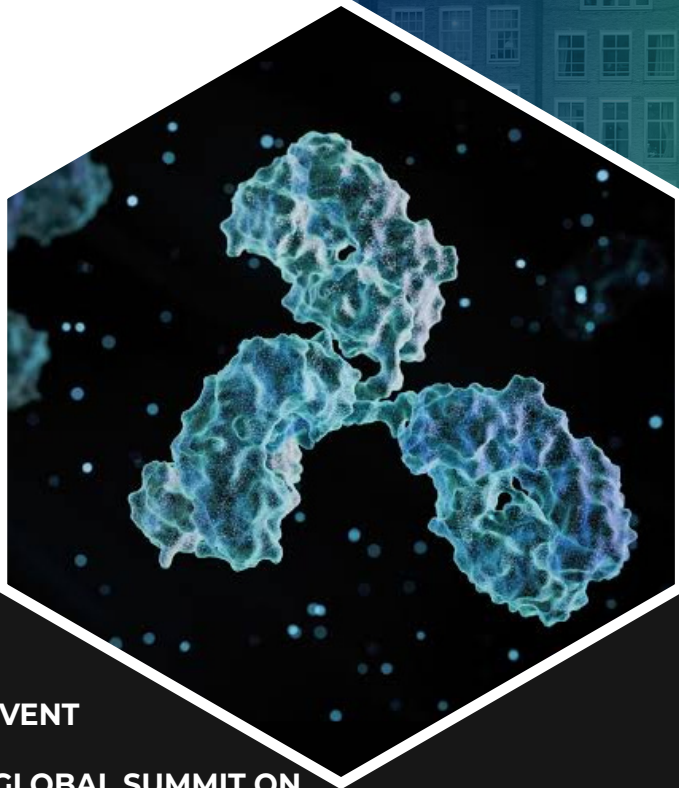
microenvironment programs. These exploratory findings support a phenotype-guided immunologic framework for future NPC biomarker studies.

Presenter:

Yunjoo Lee

Massachusetts General Hospital-(MGH), USA

DAY 02



VIRTUAL EVENT

4TH EURO-GLOBAL SUMMIT ON

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY

OCTOBER 21-22, 2026

SPEAKER TALKS



Osteal Macrophages as Emerging Regulators of Bone Remodeling: Molecular Functions and Therapeutic Targeting in Osteoporosis

M Alaa Terkawi

Department of Orthopaedic Surgery, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Japan

Bone remodeling is tightly regulated by immune cells within the bone microenvironment, among which osteal macrophages (Omacs) have recently emerged as critical modulators of skeletal homeostasis. However, how Omac dysfunction contributes to osteoporosis (OP) remains poorly understood. Thus, we investigated the molecular identity, functional heterogeneity, and pathogenic role of Omacs in experimental models of inflammatory and postmenopausal osteoporosis. Using a dextran sulfate sodium (DSS)-induced colitis model, we demonstrate that intestinal inflammation drives systemic bone loss through profound reprogramming of Omacs. Bulk RNA-sequencing of Omacs isolated from bone revealed a marked shift toward a pro-inflammatory phenotype, characterized by activation of IL-17, NF- κ B, and TNF signaling pathways. Functionally, these inflammatory Omacs exhibited reduced phagocytic capacity, impaired support of osteoblast differentiation, and enhanced promotion of osteoclastogenesis, thereby directly favoring bone resorption. To further determine whether similar Omac dysfunction occurs in age- and hormone-related OP, we performed single-cell RNA-sequencing of Omacs from ovariectomized mice. Omacs segregated into six transcriptionally distinct subsets, representing proliferative, inflammatory, anti-inflammatory, and efferocytic states. Postmenopausal bone displayed a striking expansion of an inflammatory subset marked by oxidative stress, apoptosis, and inflammatory gene signatures. Adoptive transfer of oxidatively stressed macrophages into calvarial bone induced severe osteolytic lesions, confirming their causal role in bone destruction. Conversely, selective depletion of senescent Omacs or oxidative stress-associated subsets significantly attenuated bone loss in postmenopausal mice. Together, our findings reveal that Omacs are not passive bystanders but active drivers of pathological bone remodeling in osteoporosis. Both inflammatory and estrogen-deficient conditions skew Omacs toward inflammatory states that destabilize the bone microenvironment. Targeting Omac inflammatory signaling therefore represents a promising therapeutic strategy for preventing and treating osteoporosis.

Presenter:

M Alaa Terkawi

Hokkaido University, Japan



Functional Role of Putative Cyclin-Binding Motif within the Nuclear Localization Sequence of CHI3L1

Emiko Mizoguchi

Kurume University School of Medicine, Japan
Brown University Alpert Medical School, USA

Chitinase 3-like 1 (CHI3L1/YKL-40) is a secreted protein lacking enzymatic activity and is implicated in colitis-associated colorectal cancer (CAC). We previously demonstrated that inflammatory stimulation with TNF- α induces translocation of cytoplasmic CHI3L1 into the nucleus. A nuclear localization sequence/signal (NLS) is located at amino acids 144–173, and a putative cyclin-binding motif (KQLLL) is present at its C-terminal end (aa 170–174). To clarify the functional significance of this motif, we generated CHI3L1 KQLLL-deleted SW480 cells (so called KO cells) using CRISPR-Cas9. Stable cell lines expressing pEGFP-N1-CHI3L1 (W2D11) and empty vector controls (M3C6) were also established. Cell proliferation was assessed by MTT assay, and CHI3L1 expression and secretion were analyzed by Western blotting and ELISA. Subcellular localization before and after TNF- α stimulation was examined by immunofluorescence, and localization was further evaluated in fission yeast expressing CHI3L1-GFP.

As a result, KQLLL-deleted KO cells and M3C6 cells showed significantly reduced proliferation compared with parental wild-type (WT) cells and W2D11 cells ($p < 0.001$). Western blotting revealed markedly decreased CHI3L1 expression in KO cells, and ELISA detected no secretion. Immunofluorescence analysis demonstrated partial nuclear localization in WT and W2D11 cells, whereas KO and M3C6 cells showed reduced nuclear localization with cytoplasmic retention. In yeast, nuclear translocation was not observed, although perinuclear accumulation was detected. Notably, nuclear enlargement under TNF- α stimulation was evident in KO cells. These findings suggest that the KQLLL motif regulates nuclear localization and secretion of CHI3L1 and is essential for colorectal cancer cell proliferation and nuclear morphological responses during inflammation.

Presenter:

Emiko Mizoguchi

Kurume University School of Medicine, Japan
Brown University Alpert Medical School, USA



Effects of a Glutamine and Arginine Combination on the Inflammatory Response in a Lipopolysaccharide-Induced Sepsis Model at Different Time Points of Supplementation

Maulydia Maulydia¹, Nancy Margarita Rehatta², Subijanto Marto Soedarmo³ and Widjiati Widjiati⁴

¹Department of Anesthesiology and Reanimation, Faculty of Medicine, Universitas Airlangga, Indonesia

²Faculty of Medicine, Petra Christian University, Indonesia

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Activation of the NF- κ B signaling pathway in sepsis plays a crucial role in the expression of TNF- α , IL-8, and MMP-8, which can further exacerbate the condition. The management of sepsis requires complex strategies. Glutamine and arginine are amino acids that can modulate inflammatory process and enhance immune function, and their levels are often deficient in sepsis. This study aimed to analyze the effects of glutamine and arginine combination (GAC) on TNF- α , NF- κ B, IL-8, and MMP-8 expressions in sepsis. Seventy-two *Rattus norvegicus* were divided into three main intervention groups, each of which was further divided into three subgroups that received therapy initiated at different time points

(6 h, 24 h, and 48 h) after the intervention. Therapy was administered once daily for three consecutive days. Termination was performed 2 h after the final therapy, after which jejunal tissue were collected. The administration of GAC resulted in different cells expressing IL-8 ($p = 0.026$) in the 24-h treatment group and MMP-8 ($p < 0.001$) in the 6-h treatment group. No differences were found in cells expressing TNF- α , NF- κ B, and IL-8 in the 6-h treatment group ($p > 0.05$); TNF- α , NF- κ B, and MMP-8 in the 24-h treatment group ($p > 0.05$); and TNF- α , NF- κ B, IL-8 and MMP-8 in the 48-h treatment group ($p > 0.05$). The supplementation of GAC demonstrated different cells expressing IL-8 (in therapy started at 24 h) and MMP-8 (in therapy started at 6 h). Future studies should be conducted on dose evaluation over a longer research duration to validate more specific results.

Presenter:

Maulydia Maulydia

Universitas Airlangga, Indonesia



Pharmacovigilance and Clinical Insights into Perindopril-Induced Thrombocytopenia: A Case Report of Diagnostic Challenges and Therapeutic Alternatives

Vincent Aurelius Gonaldy¹, Mochamad Faishal Riza^{2,3}, Samuel Sudanawidjaja², Ronald Torang Marsahala Panggabean², Isnaini Isnaini², Lely Puspita Candra Dewi², Andrianus Oktovianto², Deo Idarto², Alamanda Sofania¹ and Marselina Marselina¹

¹School of Medicine, Ciputra University, Indonesia

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³Nadhatul Ulama University, Indonesia

Introduction and objectives: Perindopril-induced thrombocytopenia is a rare but potentially serious adverse drug reaction. It remains underrecognized in clinical practice, particularly in elderly patients with cardiovascular disease. This case highlights the importance of timely diagnosis and intervention in drug-induced hematologic complications.

Case report: A 73-year-old woman with a history of percutaneous coronary intervention presented with unstable angina. During hospitalization, she exhibited an acute and unexplained decline in platelet count a week after the initiation of perindopril. Infectious causes, autoimmune disorders, and bone marrow dysfunction were systematically excluded. A medication review revealed recent perindopril initiation, and its discontinuation led to progressive platelet recovery. The strong temporal relationship confirmed perindopril-induced thrombocytopenia as the likely etiology (Table 1).

Discussion: The immune-mediated destruction of platelets is proposed as the underlying mechanism, similar to other drug-induced thrombocytopenias. This case underscores the importance of systematic diagnostic evaluation, routine hematologic monitoring, and pharmacovigilance in patients receiving angiotensin-converting enzyme inhibitors. Alternative antihypertensive strategies, such as angiotensin receptor blockers, may be preferable in susceptible individuals.

Conclusion: Perindopril-induced thrombocytopenia should be considered in patients presenting with unexplained platelet decline. Early recognition, drug discontinuation, and close monitoring are crucial in preventing complications. Further research is needed to refine diagnostic criteria and develop safer prescribing guidelines. Keywords Perindopril, Thrombocytopenia, Angiotensin-converting enzyme inhibitors, Drug-induced thrombocytopenia, Case report.

CLINICAL TIMELINE TABLE

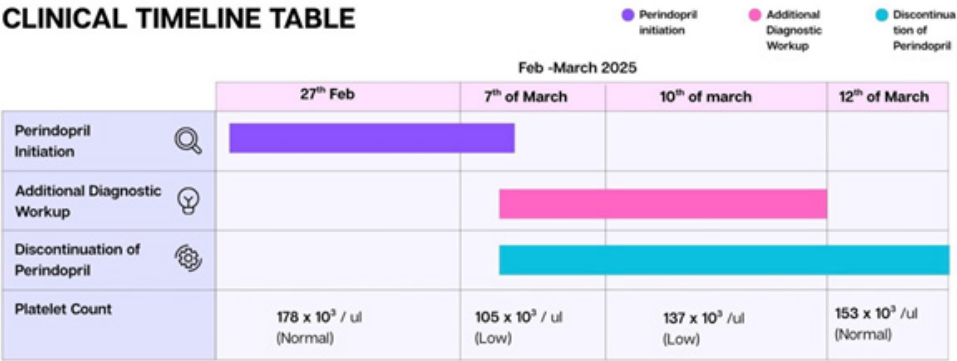


Figure 1. Clinical Timeline Table

Source: Primary Data

Table 1. Clinical Timeline During Patient Hospitalization

Date	Platelet Level	Decision
27 th February 2025	178 x 10 ³ µL	-Initiation of Perindopril
7 th March 2025	105 x 10 ³ µL	-Discontinuation of Perindopril
		-Excluding any possibilities of other thrombocytopenic causes (Complete Blood Count)
		-Neutrophilia(71.8%), Lymphocytopenia (18%), Monocytosis (8.2%), While Haemoglobins, Erythrocytes indices, and mean platelet volumes within normal limits
		-Microscopic examination of peripheral blood smears shows normochromic, normocytic red blood cells. There were no giant platelets or morphological abnormalities suggestive of a bone marrow disorder
		-IgM of Dengue Fever shows negative (excluding one of most common tropical disease to cause thrombocytopenia)
		-Coagulation profile: Prothrombin time (PT), Activated partial thromboplastin time (APTT), and International Normalized Ratio (INR) were within normal limites

		-Cardiac Biomarkers: Creatinine Kinase-MB(CKMB) was within normal range at 3ng/ml
		-Renal and Liver function tests: all within normal limits
10 th March 2025	137 x 10 ³ µL	-Further Monitoring of platelet on a 3-day Basis (Following discontinuation of Perindopril), Reticulocyte elevated at 3.03%
12 th March 2025	153 x 10 ³ µL	-Prior to discharge of patient, platelet was back to normal count

Presenter:
Vincent Aurelius Gonaldy
Ciputra University, Indonesia



Immunotherapy in Treating Gastrointestinal and Hepatobiliary Cancer

Hoi Lam Karen Li

Department of Medicine, Queen Mary Hospital, Hong Kong

Gastrointestinal malignancies are responsible for one-quarter of the global cancer incidence and one-third of cancer-related deaths. According to GLOBLCAN estimates, by 2050, it is anticipated that the incidence and mortality rates of gastrointestinal cancer will have nearly doubled with increases observed in lower-income countries, irrespective of cancer types and sexes. Key risk factors include infections such as *H. pylori*, hepatitis B virus, hepatitis C virus, smoking, alcohol, obesity, physical inactivity, metabolic associated fatty liver disease, hereditary cancer syndromes etc. Immunotherapy, especially immune checkpoint inhibitor has emerged as the first line therapy for several gastrointestinal and hepatobiliary cancers. Immune mechanisms of immune checkpoints and immune checkpoint inhibitors will be explained. Immunotherapies for the treatment of advanced HCC generally involve an anti-PD-1/PD-L1 agent as monotherapy or in combination with an antiangiogenic or anti-CTLA-4 agent. Immunotherapies have also shown survival benefits in MSI-H metastatic colorectal cancer. In gastroesophageal cancers and advanced biliary tract cancers, immunotherapies are combined with chemotherapy. Response of immunotherapy remain limited in pancreatic cancer. Efficacy and safety of selected landmark gastrointestinal and hepatobiliary cancer trials will be discussed. Immunotherapies are also moving into the perioperative and adjuvant phase in gastric, esophago-gastric and biliary tract cancers. The search for biomarkers remains imperative. Immune-related adverse events (IRAE) result as a hyperactive immune state and could be severe and life-threatening. Mechanism and treatment of IRAE with a focus on gastrointestinal and liver toxicities will be discussed. Reference will be made to my recently published article titled 'Combined Immunotherapy in Treating Patients with Advanced Hepatocellular Carcinoma' published in Special Issue Advances in Hepatology in Biomedicines.

Presenter:

Li Hoi Lam Karen

Queen Mary Hospital, Hong Kong



Application of Artificial Intelligence Technique and Simulation on the Production of Shariah Compliance Influenza Vaccine

Norliza Abd Rahman¹, Fatin Nur Aliya Mohamad Ros¹, Jarinah Mohd Ali¹, Nurina Anuar¹, Siti Rozaimah Bt. Sheikh Abdullah¹ and Amir Fazlim Bin Jusoh @ Yusoff²

¹Chemical Engineering Programme, Faculty of Engineering & Built Environment, Malaysia

²Pusat Fiqh Kontemporari dan Pematuhan Syariah, Fakulti Pengajian Islam, Malaysia

Influenza vaccine is a substance that is used to treat fatal diseases caused by flu viruses such as Influenza A H1N1 and H5N1. There are various methods to produce influenza vaccine such as by using chicken eggs, cell cultures or even by using recombinant DNA techniques. This study will focus on the cell culture method because this method is proven to have a high productivity in a short time period compared to other methods. To comply with the shariah, it means that the vaccine must not contain any of non-halal substances or produced using non-halal substance. This study was mainly focused on the bioreactors which are simulated by using a software called SuperPro® Designer. This simulation project focused on two main components that are contributing to the halal status of the vaccine which are the medium and cell used during the cell culture. Based on the simulation results, it can be said that the serum free medium on Vero cells can produce a comparable quantity of influenza vaccine at 33 µg/mL if compared with the existing influenza vaccine productions that are using MDCK cells. Furthermore, the production of influenza vaccine also can be estimated by neural network using data from previous research. A programme using MATLAB R2016a was used to develop the neural network. The software consists of Neural Network Toolbox which functions to train the input data and estimate the production of virus concentration (HA) as output data. An input layer represents the criteria of the cell mass concentration and growth kinetic of the cell, whereas the output layer gives the estimation values of virus concentration (HA). Back propagation algorithm with TANSIG transfer function was used to accomplish the estimation of HA. The error value given by the network was 0.0390. Therefore, the users could determine and estimate the production of virus concentration in just a short period of time.

Presenter:

Norliza Abd. Rahman

Faculty of Engineering & Built Environment, Malaysia



Genomic and Transcriptomic Insights into Innate Immunity Signatures in Indigenous Indian Cattle

Suneel Kumar Onteru¹, Mayank Roshan¹, Dheer Singh¹ and Ragothaman M. Yennamalli²

¹Molecular Endocrinology, Functional Genomics and Systems Biology Laboratory, Animal Biochemistry Division, ICAR - National Dairy Research Institute, India

²Department of Bioinformatics, School of Chemical and Biotechnology, SASTRA Deemed to be University, India

Innate immunity serves as first line of defence against pathogens that plays a central role in determining disease resistance in cattle. An array comparative genomic hybridization (aCGH) involving copy number variation (CNV) analysis among six cattle breeds, including four indigenous Indian breeds, Kangayam (KNG), Tharparkar (TP), Sahiwal (SW), Gir (GIR), one crossbred Karan Fries (KF), and one exotic breed, Holstein Friesian (HF), was conducted along with transcriptomic analysis of unstimulated (basal) and lipopolysaccharide (LPS)-stimulated peripheral blood mononuclear cells (PBMCs) across SW, TP, GIR, and KF. The results of aCGH analysis, demonstrated the highest number of duplications in KNG (1189 genes), followed by TP (534 genes), while the greatest number of deletions were found in SW (774 genes). TGF- β 1, CD79A, and IL4 were the major hub genes showing duplications in KNG and TP, respectively, whereas in SW, 113 innate immune genes with hub genes PSMC5, MAPK1, and AXIN1 showed deletions. In contrast, KF and HF showed no genes with deletions and fewer duplicated innate immunity genes. The gene expression analysis at basal level revealed 259 upregulated and 180 downregulated genes in indigenous breeds compared to KF. Four genes PCDH1, LRP1B, CCL8, and WNT4 were upregulated across SW, TP, and GIR. Genes showing duplications at DNA level (FOSB, NLRP13, and PLAUR) also depicted a higher expression in TP, while in SW SLC29A4 having deletion and reduced expression was detected. In LPS-challenged PBMCs, a total of 1,121 DEGs were identified, including 661 upregulated and 460 downregulated transcripts. Among them, 111 genes were commonly upregulated across all breeds, with PTGS2, NOS2, NLRP3, CXCL8, IL1B, IL6, IL10, CSF2, CCL2, and TNF forming major innate immune hub genes. Moreover, eight genes with duplications at DNA level in TP a higher gene expression was identified (IL4I1, LAIR1, LOC504861, MRAP, NLRP12, PTGIR, PVR, BCL3 while FAM20C gene with deletion in SW having downregulation was found. By integrating aCGH, and transcriptomics under both basal and pathogen-challenged conditions, the study establishes functional relevance of structural variants. The concordance between gene duplications/deletions and corresponding expression changes provides mechanistic validation that has rarely been demonstrated in livestock, particularly cattle immunity studies.

Presenter:

Suneel Kumar Onteru

ICAR-National Dairy Research Institute, India



Demyelinating Disorders in Women: Epidemiology, Immunology and Clinical Implications Across MS, NMOSD and MOGAD

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The sex differences among different demyelinating disorders are noted to be significant. With 2.9 million cases worldwide, MS affects roughly 22.2 per 100,000 persons and has climbed by 30% since 2013. The female-to-male ratio ranges from 2:1 to 3:1 in MS. With a female-to-male ratio of 4.7:1 or 9:1 in AQP4-IgG-positive patients, NMOSD affects 0.34 to 10 per 100,000 people. MOGAD affects 1.3 to 2.5 out of every 100,000 people and affects both men and women equally. (Figure 1.1 and 1.2) These differences are linked to immune-related genes on the X chromosome, increased B-cell survival due to estrogen, and increased B-cell and CD4+ T-cell activity in women.

Prevalence is also influenced by geography. Low vitamin D, higher latitudes, and EBV infection are linked to MS, which is most prevalent in North America and Europe, especially among those of Caucasian ancestry. African and Afro-Caribbean populations have the highest prevalence of NMOSD. Latitude does not seem to be related to MOGAD.

Additionally, pathogenesis varies. CD4+ T-cell attacks on myelin proteins characterize MS; anti-MOG antibodies drive MOGAD, while NMOSD involves complement-mediated astrocyte damage via AQP4-IgG. Males have lymphoid dominance, which is linked to a higher risk of progression, whereas females have myeloid-dominant immune pathways, which contribute to a higher incidence.

(Refer to figure 2.1-2.3)

Because MS is more common in women, a major diagnostic problem is that when a woman presents with symptoms such as optic neuritis or transverse myelitis, doctors may fail to perform NMOSD or MOGAD testing. This may lead to an underdiagnosis of NMOSD or MOGAD in males and an overdiagnosis of MS in women.

Hormones and pregnancy have a major impact on disease activity. Due to changes in the immune system, MS relapses rise after delivery and peak three to six months after birth, while they decrease during pregnancy, especially in the third trimester. Although relapses frequently happen after childbirth, NMOSD and MOGAD do not exhibit a consistent pattern. Menopause can exacerbate disability even as relapse frequency decreases, and early menstruation raises the risk of multiple sclerosis.

Teriflunomide, S1P modulators, and cladribine are among the medications that must be stopped before to conception since they are detrimental to the developing embryo. During pregnancy and lactation, interferon- β and glatiramer acetate are regarded as safe. Alemtuzumab should not be used during pregnancy. Notably, no RCTs from 2000 to 2026 have published sex-stratified safety or efficacy results, underscoring the need for more research and individualized, hormone-informed counseling.

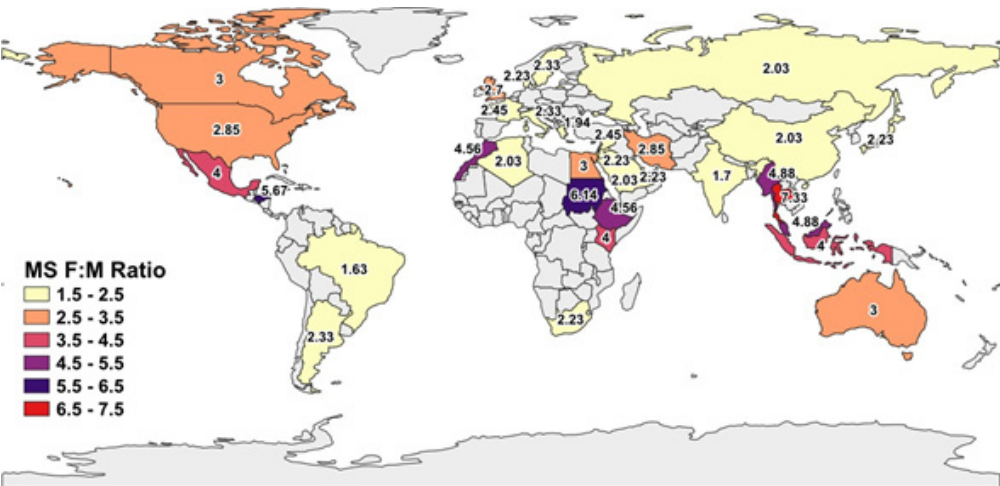


Figure 1.1 Global distribution of the female-to-male (F: M) sex ratio in Multiple Sclerosis'

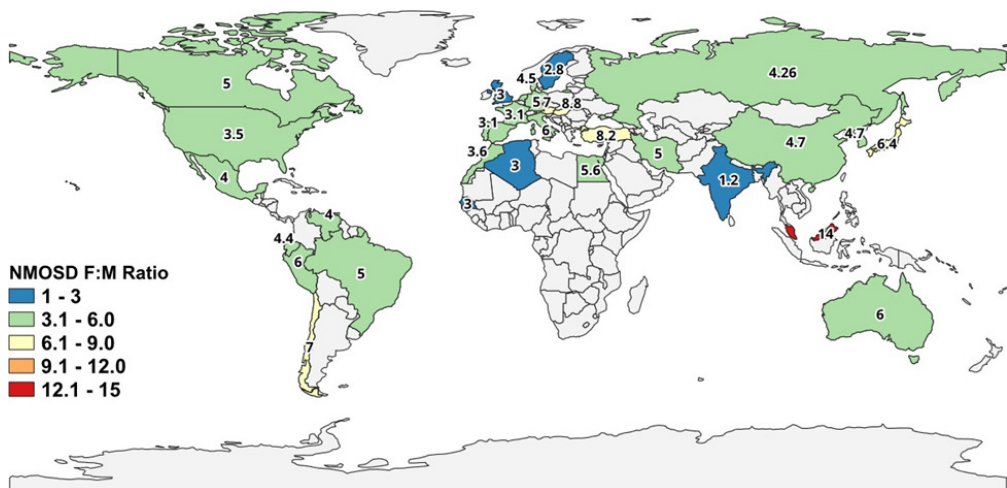


Figure 1.2 Global distribution of the female-to-male (F: M) ratio in Neuromyelitis Optica Spectrum Disorder (NMOSD)

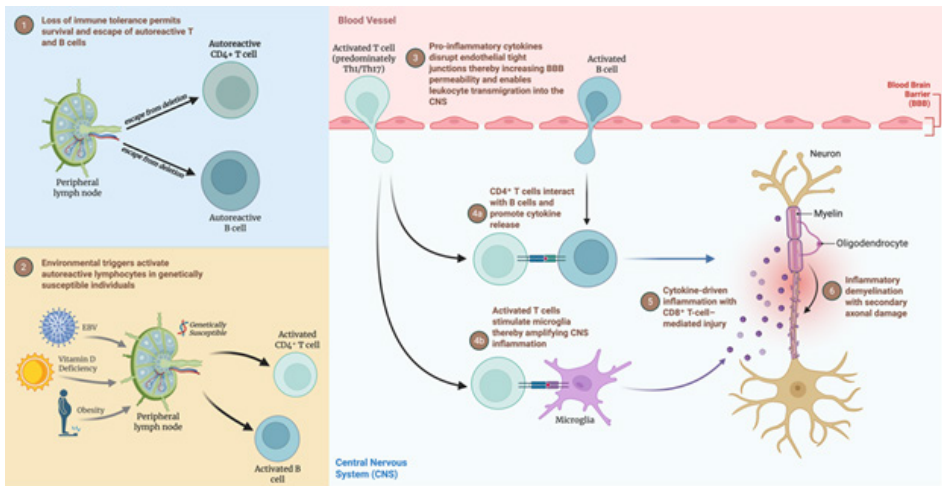


Figure 2.1 Illustration of Pathogenesis of MS.

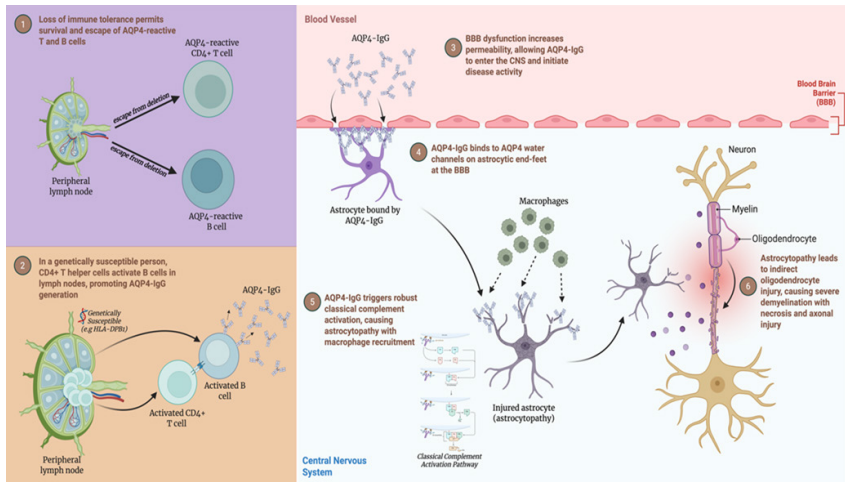


Figure 2.2 Illustration of Pathogenesis of NMSOD

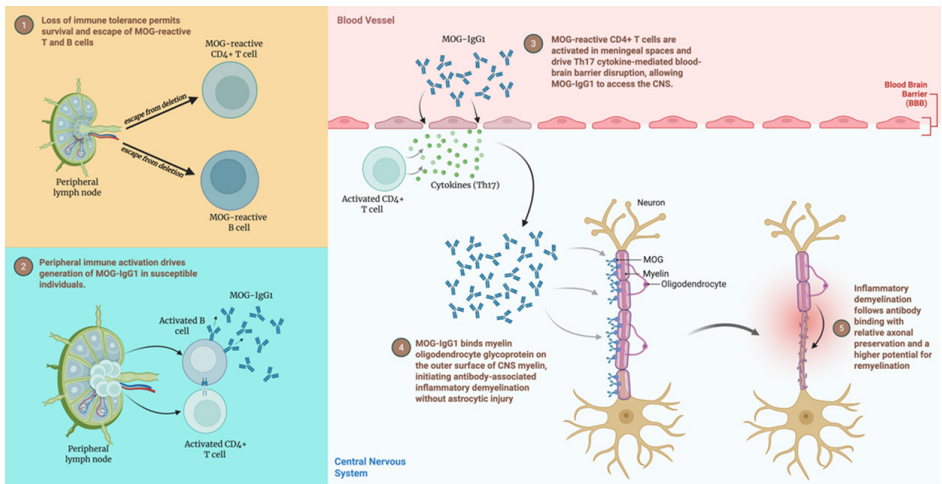


Figure 2.3 Illustration of the pathogenesis of MOGAD

Presenter:

Syeda Maryam Batool

Jinnah Sindh Medical University, Pakistan



Comparative Evaluation of Radiological and Histopathological Assessment of Depth of Invasion and Tumour Thickness in Oral Squamous Cell Carcinoma Among North Indian Patients

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Introduction: Oral squamous cell carcinoma (OSCC) is one of the most common malignancies of the head and neck region and represents a major health burden, particularly in developing countries such as India. Depth of invasion (DOI) and tumour thickness (TT) are important prognostic indicators that influence disease staging, treatment planning, and survival outcomes. Both parameters have been incorporated into the 8th edition of the American Joint Committee on Cancer (AJCC) TNM staging system. This study aimed to evaluate the correlation between radiological and histopathological measurements of DOI and TT in patients with OSCC.

Objectives: To measure Depth of invasion and Tumour thickness radiologically using MRI and histopathologically and to evaluate correlation between the two.

Methods: A retrospective observational study was conducted over a two-year period involving patients with histologically confirmed OSCC who underwent surgical treatment and preoperative MRI. Radiological measurements of DOI and TT were obtained from MRI scans and compared with histopathological measurements recorded from formalin-fixed, paraffin-embedded resection specimens. Statistical analyses were performed to determine the degree of correlation between the two findings.

Results: A significant positive correlation was observed between radiological and histopathological measurements of tumour thickness ($r = 0.64$, $p < 0.001$) and depth of invasion ($r = 0.59$, $p < 0.001$). The mean values obtained by both methods demonstrated close agreement, indicating the reliability of MRI in estimating these parameters preoperatively. Lymph node metastasis was significantly associated with poorer histological differentiation ($p = 0.002$) and a greater number of involved lymph nodes ($p = 0.005$). Although concordance between radiological and pathological T and N staging was moderate, it was not statistically significant.

Conclusion: MRI-based assessment of tumour thickness and depth of invasion correlates well with histopathological measurements in OSCC, supporting its role as a reliable preoperative adjunct. However, histopathology remains the gold standard for definitive staging and prognostication. This is the first study from Northern India to demonstrate such radiological–histopathological correlation, providing valuable regional evidence to support integrated imaging–pathology approaches in OSCC management.

Presenter:

Fatima Khan

Hamdard Institute of Medical Sciences and Research, India



Could Fabry Disease Cause Giant Coronary Aneurysms in a 7-Month-Old infant: A Case Report

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Objective: Fabry disease (FD) is an X-linked lysosomal disorder caused by GLA mutations, resulting in systemic glycosphingolipid accumulation and chronic inflammation. Although cardiac involvement is common in adults, pediatric coronary aneurysms have never been reported in FD. This case describes the first instance of giant coronary artery aneurysms in a 7-month-old infant with genetically confirmed FD and explores the potential link between FD-related inflammation and a Kawasaki-like vasculitic phenotype.

Methods: A 7-month-old male with 21 days of unexplained fever, elevated inflammatory markers, and echocardiographic coronary aneurysms underwent comprehensive infectious, autoimmune, and genetic workup, including Whole Exome Sequencing (WES) and confirmatory alpha-galactosidase an enzyme assay.

Results: The patient showed persistent fever, thrombocytosis, and markedly elevated CRP/ESR. Echocardiography revealed fusiform and saccular aneurysms in all three coronary arteries with mural thrombosis. All infectious and autoimmune tests were negative. WES identified a pathogenic hemizygous GLA mutation (c.427G>A, p.Ala143Thr), with significantly reduced enzyme activity confirming cardiac-variant FD. The mother was a carrier.

Conclusion: This is the first reported case of giant coronary aneurysms in an infant with FD. The presentation mimicked atypical Kawasaki disease but was distinguished by prolonged fever and absence of classic features. We suggest that FD-driven chronic inflammation—mediated by Gb3 accumulation and immune pathway activation—may predispose to severe early-onset coronary vasculopathy. This case highlights the importance of considering inherited metabolic disorders in atypical Kawasaki-like presentations, as early genetic diagnosis is critical for timely enzyme replacement therapy and improved outcomes.

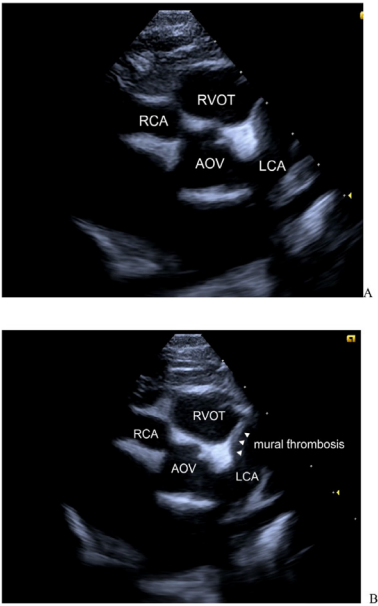


Figure 1: Echocardiographic images showing (A) giant aneurysms in both coronary arteries with mural thrombosis in the left coronary arteries, and (B) detailed view of mural thrombosis. AOV, aortic valve; LCA, left coronary artery; RCA, right coronary artery; RVOT, right ventricular outflow tract.

TABLE 1 | The patient's laboratory test results.

Test	Result	Reference range
White blood cells	11.7	4–10 × 10 ³ /uL
Neutrophil%	54	
Lymph%	39	
Mon%	5	
Eos%	2	
Hemoglobin	8	11–16 g/dL
Platelets	1018	150–450 × 10 ³ /uL
ESR	130	0–10 mm/h
CRP	52	Negative: < 10
AST	35	< 40 U/L
ALT	26	< 40 U/L
Albumin	4.1	3.5–5.2 g/dL
Ferritin	215	7–140 ng/mL
c-ANCA	6.6	< 10 U/ML
p-ANCA	< 1	< 15 U/ML

Presenter:
Sahar Naderi Shiran
Tehran University of Medical Sciences, Iran



Clinical Outcomes of COVID-19 Convalescent Plasma According to Treatment Timing and ELISA Antibody Levels: A Real-World Retrospective Cohort Study

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²Blood Center, Trabzon Kanuni Training and Research Hospital, Trabzon University, Türkiye

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Background and Objective: Convalescent plasma (CP) was widely used as passive immunotherapy during the early COVID-19 pandemic, but uncertainty remains regarding the influence of administration timing and antibody level on outcomes. This study evaluated associations between CP timing, ELISA-measured antibody levels, and clinical outcomes.

Materials and Methods: This retrospective real-world cohort included 272 adults with RT-PCR-confirmed COVID-19 who received a single CP unit at a tertiary center in Türkiye between 1 April 2020 and 1 April 2021. At CP administration, 180 patients were hospitalized and 92 were treated as outpatients. Anti-SARS-CoV-2 IgG in transfused plasma was measured by semi-quantitative Euroimmun ELISA and categorized as low (0.00–0.99), medium (1.00–4.99), or high (≥ 5.00). Administration was classified as early (≤ 7 days) or late (> 7 days) from symptom onset. The primary outcome was 30-day all-cause mortality.

Results: Among 92 outpatients, 18 (19.6%) subsequently required hospitalization. Thirty-day mortality was 39.4% among hospitalized patients and 1.1% among outpatients ($p < 0.001$), reflecting major baseline clinical differences. Median ELISA indices were similar in hospitalized patients and outpatients (4.23 vs. 3.64; $p = 0.308$). Among hospitalized patients, ELISA-index distributions did not differ between survivors and non-survivors ($p = 0.427$). ELISA index was not associated with 30-day mortality (OR per doubling, 0.89; 95% CI, 0.67–1.19; $p = 0.425$). The high-versus-medium comparison was non-significant (OR, 0.88; 95% CI, 0.48–1.62; $p = 0.757$), as was the timing-by-ELISA interaction ($p = 0.074$).

Conclusion: In this CP-treated cohort, ELISA-measured antibody level was not independently associated with 30-day mortality, and no significant timing-by-antibody interaction was demonstrated. These findings highlight the complexity of passive antibody therapy and support future studies using validated functional antibody assays, standardized exposure definitions, detailed severity adjustment, and appropriate comparator groups.

Presenter:

Özlem Bayraktar Saral

Trabzon University, Türkiye



Autophagy Genes Transcription and Ultrastructure Changes in Brain Cells of Mice in Ageing and Neurodegeneration Development

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²Research Institute of Clinical and Experimental Lymphology, Branch of the Institute of Cytology and Genetics RAS, Novosibirsk, Russia

Earlier we have shown the positive effect of autophagy inducer trehalose drinking in young (2-months old) db/db mice (Korolenko et al., 2021). There was significant decrease in body weight and glucose level in young db/db mice as result of trehalose treatment.

It was not known the effect of trehalose drinking in elder db/db mice, as well as trehalose effect on autophagy changes in liver and brain cells.

Animals, which are approved by the Ethics Committee of the Research Institute of Neurosciences and Medicine. 5-month-old db/db mice (BKS. CgDock7m + / + Lep^{rdb}/J stock 000642; Jackson Laboratory; Bar Harbor, ME, USA) were used. The samples were obtained from the SPF vivarium of the Institute of Cytology and Genetics of the Siberian Branch of the Academy of Sciences (Novosibirsk, Russia). The mouse line (with leptin receptor mutation) is a model of early obesity and type 2 in study.diabetes mellitus, with a significantly reduced lifespan of db/db 169±30 days, (less than 6 months (significantly fewer healthy control mice) were in study.

The therapeutic effect of treatment with 3% trehalose in drinking water was investigated on 5-month-old db/db mice with diabetes T2 and obesity. Trehalose did not induce a significant decrease in the body weight mass or blood glucose and cholesterol levels but it decreased accumulation insulin receptor gene *Insr*. There was significant increase in the lipofuscin levels in cortical neurons and glial cells, while trehalose did not attenuate the accumulation of this marker of aging. Thus, a differential effect of trehalose was obtained for 5-month-old db/db mice as compare to young db/db mice, possibly consisting in the absence of activation of autophagy gene transcription or ineffective gene transcription; in brain cells there was no attenuation of lipofuscin amount. Apparently, the therapeutic effect of trehalose on the disturbances of db/db line mice decreases with age and becomes ineffective at 5 months of age.

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and cholesterol levels but it decreased accumulation insulin receptor gene Insr. There was a visual increase in the lipofuscin levels in cortical neurons and glial cells, while trehalose did not attenuate the accumulation of this marker of aging. Thus, a differential effect of trehalose was obtained for 5-month-old db/db mice as compare to young db/db mice, consisting in the absense of activation of autophagy gene transcription or ineffective at 5 months of age gene transcription or attenuation of lipofuscin amount. Apparently, the therapeutic effect of trehalose on the disturbances of db/db line mice decreases with age and becomes ineffective at 5 months of age

Presenter:

Tatiana Aleksandrovna Korolenko

Research Institute of Neurosciences and Medicine, Novosibirsk, Russia



Protective Efficacy of the Recombinant Hvt+Ibd+H5 Alone or Boosted by Subunit Inactivated Vaccine against Experimental Challenge with Hpai-H5n1 Clade 2

Losada Torres, J.L

Boehringer Ingelheim GmbH, Germany

Highly pathogenic avian influenza (HPAI) H5 viruses of clade 2.3.4.4b continue to pose a major threat to poultry production worldwide. This study evaluated the protective efficacy of a recombinant herpesvirus of turkey vaccine expressing IBDV VP2 and a COBRA (Computationally Optimized Broadly Reactive Antigen) derived H5 antigen (rHVT+IBD+H5, Boehringer Ingelheim GmbH, Germany), administered either alone or in combination with an inactivated baculovirus-expressed H5+Newcastle disease (ND) subunit vaccine (Inact H5+ND, Boehringer Ingelheim GmbH, Germany), against challenge with HPAI H5N1 clade 2.3.4.4b in broiler chickens.

A total of 120 commercial broilers chickens were allocated to six experimental groups. Birds received either rHVT+IBD+H5 at one day of age (DOA) alone or followed by an inactivated H5/ND booster at 10 DOA. At 28 DOA, vaccinated and control groups were challenged with a recent Egyptian HPAI H5N1 clade 2.3.4.4b isolate. Clinical protection, mortality, virus shedding, serological responses, histopathology, and immunohistochemistry were assessed.

The prime-boost regimen achieved 100% protection against mortality, while standalone rHVT+IBD+H5 vaccination provided 90% protection, compared with 0% survival in non-vaccinated challenged controls. Significant reductions in oropharyngeal and cloacal virus shedding were observed in both vaccinated groups, with virus shedding declining to near-undetectable levels by 7 days post-challenge. Vaccinated birds exhibited reduced histopathological lesions and lower tissue distribution of H5 antigen than control birds. Although haem-agglutination inhibition titres remained low prior to challenge, ELISA monitoring demonstrated vaccine-induced seroconversion, and the DIVA principle was maintained through absence of NP-specific antibody responses in vaccinated non-challenged birds.

These findings demonstrate that rHVT+IBD+H5 vaccination provides strong protection against HPAI H5N1 clade 2.3.4.4b challenge in broilers, whether used as a standalone hatchery vaccination or as part of a prime-boost programme. The vaccine significantly reduces mortality and virus shedding, supporting its role as an effective tool for HPAI control.

Presenter:

Jose Luis Losada Torres

Boehringer Ingelheim GmbH, Germany



Improving Psychiatry Processes in Abidjan and How Digital Assistants Can Help the Consultation

Mohamed Bobo Diallo

Université Félix Houphouët-Boigny, Cocody Campus
Cote d'Ivoire

We sketch a roadmap to improve psychiatry patients conditions in Ivory Coast and elsewhere wise, where we survived that some spiritually trialed patients while experiencing severe social destabilizations are not sufficiently distinguished with insanity, in the drug pipeline of brain degraded circuiteries patients. In 2024, very concerning that a twelve years haldol suspcied case have been freed never a case of schizophrenia nor a case of glaucoma three times failed the visual tests exception to certainly haldol effects.

Also, the suspcied at home are almost ambushed by psychiatry services, without that a tiers be notified as best practiced elsewhere, nor reconfigured mercifully to avoid chemistry under pressure decision of the gouvernement.

Some abuses of that psychiatry have also neglected according to the palo alto model, that incumbent complaining relatives may lack themselves psychiatric hold in account that they never care satisfying basic needs of the indexed pathological case. This is very seriously to deepened what have generated military warfare after unsupportable destabilizations of reforming people in west africa.

Also, it is very concerning, that some basic prescriptions are unknown by the prescriptors like the olanzapine even doctorally acclaimed. Some doctors also dangerously hold in contempt established spiritual schools while lacking in other cases investigating body mineral deficiencies in some temporary pathologies that have haldol painfully a very dangerous side effect unrest.

It is true that alternative medicine is very satisfying many houses, all over west africa, but we scare the thesis that training lacks to the psychiatrist and the ophtamological specialities, and that there is a systemic habit to exclude failure rather than tolerating regulating suffering from the extreme physiological conditions, including winter.

Intelligent sincerely engineered software can help the patients better communicate with the psychiatrist, to give them more chance to survive a bit more fit to their diktats.

Presenter:

Diallo Mohamed Bobo

Université Félix Houphouët-Boigny, Cocody Campus, Cote d'Ivoire



Health and Safety Hazards and Associated Organisational and Social Support Factors for Deathcare Workers: A Global Scoping Review

Mary Aku Ogum¹, Nkosi Nkosi Botha¹, Cynthia Esinam Segbedzi², Anita Asiwome Adzo Baku³, Victor Kwasi Dumahasi⁴, Ruby Victoria Kodom⁵, Samuel Maneen¹, Ivy Selorm Tsedze⁶ and Edward Wilson Ansah¹

¹Department of Health, Physical Education and Recreation, University of Cape Coast, Ghana

²Department of Arts and Social Sciences Studies, Jasikan College of Education, Ghana

³Department of Health Services Management, University of Ghana Business School, Ghana

⁴Institute of Environmental and Sanitation Studies, Environmental Science, College of Basic and Applied Sciences, University of Ghana, Ghana

⁵Department of Health Services Management/Distance Education, University of Ghana, Ghana

⁶Ho Teaching Hospital, Ghana

Background: Deathcare workers, including mortuary workers, embalmers, funeral directors, and undertakers, are routinely exposed to occupational health and safety risks. Despite recommendations from the International Labour Organisation (ILO) and the World Health Organisation (WHO), many deathcare facilities lack adequate engineering controls, administrative measures, and personal protective equipment (PPE) required for safe work practices.

Objective: To synthesise global evidence on the work practices, occupational hazards, and organisational and social support systems of deathcare workers to inform policy, practice, and future research.

Scope: The review covered global evidence on occupational hazards, workplace safety practices, and support systems among deathcare workers.

Methods: The scoping review was conducted with the PRISMA-ScR and JBI methodological guidelines. A comprehensive search was conducted across multiple international databases. After screening and data extraction, 64 peer-reviewed full-text studies were included and analysed using qualitative thematic synthesis.

Results: The review identified a range of occupational hazards, including physical and ergonomic injuries, biological and chemical exposures, psychosocial stressors, and indoor air pollution. Exposure levels varied across settings and were influenced by workers' characteristics, workplace safety culture, and the availability of safety controls. Inadequate engineering and administrative con-

trols, insufficient PPE supply and utilisation, and poor adherence to donning and doffing procedures contributed to elevated occupational risks. Many facilities also lacked structured social support systems, counselling services, and compensation schemes. Workers adopted both positive and negative coping strategies to manage occupational challenges.

Conclusion: The use of inappropriate equipment, inadequate training, limited supervision, insufficient medical screening and vaccination, and the absence of post-exposure prophylaxis undermine workplace safety. Strengthened policy interventions are needed to improve occupational health and safety in death-care settings through enhanced training, supportive supervision, counselling services, compensation mechanisms, and the consistent provision and proper use of PPE.

Presenter:

Mary Aku Ogum

University of Cape Coast, Ghana



Preoperative IV Iron and Postoperative Blood Transfusion Reduction in Non-Anaemic Patients Undergoing Cardiac Surgery: A Systematic Review and Meta-Analysis of RCTs

Younes Agnaou¹, Zeyad Ali Murad², Ayoub Ait Lahcen³, Mustafa Alkhawam⁴, Marwa Yahia Elbasosy⁵, Marwa Omar Abdelhamid⁶, Abdeljalil El Hilali⁶, Latifa A. Abdallatif⁷ and Haytham Abdelrahman⁸

¹Faculté de Santé de Créteil - UPEC (Paris 12), Paris-Est Créteil Val-de-Marne University, France

²Faculty of Medicine and Health Sciences, University of Aden, Yemen

³Cadi Ayyad University, Faculty of Medicine and Pharmacy of Marrakech, Morocco

⁴University of Alabama at Birmingham, Division of Cardiovascular, USA

⁵Menoufia University Hospitals, Egypt

⁶Faculty of Medicine and Pharmacy of Agadir, Ibn Zohr University, Morocco

⁷Capital University - College of Medicine, Egypt
Cairo University Hospitals, Egypt

Preoperative intravenous iron is increasingly used to optimize haemoglobin before major surgery, but its benefit in non-anaemic patients undergoing cardiac surgery remains uncertain. This systematic review and meta-analysis evaluated whether preoperative IV iron reduces postoperative red blood cell transfusion and improves hematologic outcomes in adults with normal baseline haemoglobin undergoing cardiac surgery. A systematic search of PubMed, Embase, Scopus, Web of Science, and the Cochrane Library was performed through October 2025 to identify randomized controlled trials comparing preoperative IV iron with placebo, saline, or standard care. The primary outcomes were postoperative RBC transfusion incidence and number of transfused units. Secondary outcomes included postoperative haemoglobin, iron indices, infection, mortality, and other clinical outcomes. Three randomized controlled trials involving 338 patients were included. Preoperative IV iron significantly reduced the incidence of postoperative RBC transfusion (RR 0.62; 95% CI 0.43–0.88) and decreased the number of transfused RBC units (MD -1.08; 95% CI -1.61 to -0.54). Although haemoglobin levels did not differ significantly in the first 48 hours or during the first postoperative week, the IV iron group showed significantly higher haemoglobin at 4–6 weeks after surgery (MD 0.84 g/dL; 95% CI 0.41–1.26). IV iron also significantly improved postoperative ferritin and transferrin saturation, without a significant increase in infection or mortality. Preoperative IV iron appears to reduce transfusion exposure and improve medium-term hematologic recovery in

non-anaemic adults undergoing cardiac surgery, although larger multicenter trials are needed to confirm these findings.

Presenter:

AGNAOU Younes

Paris-Est Créteil Val-de-Marne University, France



Clonal Hematopoiesis (CHIP) as a Modifiable Cardiovascular Risk Factor: Targeted Anti-Inflammatory Intervention Trials

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¹Olabisi Onabanjo University Teaching Hospital, Nigeria

²Research Junction Institute, Columbus Ohio, USA

³School of Education, University of Cincinnati, USA

Background: CHIP is an age-related somatic mutation-driven state (commonly TET2, DNMT3A, ASXL1) that amplifies IL-1 β /IL-6-mediated inflammation and elevates cardiovascular disease (CVD) risk. Some studies demonstrated that IL-1 β blockade reduces major adverse cardiovascular events (MACE), with signals of greater benefit in certain CHIP carriers.

Methods: Following PRISMA guidelines and registered in PROSPERO (CRD420261429580), we conducted searches in pubmed, web of science, scopus, and embase with a duration between January 2016 till June 2026, we identified a total of 399 studies. A meta-analysis of randomized control trials or post-hoc analyses of targeted anti-inflammatory agents (IL-1 β or IL-6 pathway modulators) with CHIP ascertainment or stratification was performed to investigate the hematologic / Dual-Risk Safety, Inflammatory Biomarker Response, MACE. Rob2 was used for risk of bias.

Result: Canakinumab produced consistent cardiovascular benefit with important effect modification. In IL-6 responders (on-treatment IL-6 <1.65 ng/L), canakinumab reduced MACE (HR 0.68), cardiovascular mortality (HR 0.48), and all-cause mortality (HR 0.52). Heart failure hospitalization was reduced in a dose-dependent manner (300 mg: HR 0.76; p for trend = 0.025), with benefit observed in patients with and without prior heart failure. Hematologic and dual-risk signals were favorable. In patients with concurrent CHIP and anemia, canakinumab significantly improved hemoglobin response (p < 0.001 for time $\times$ treatment interaction), with stronger effects in TET2-mutated individuals. Incident anemia was reduced, and proteomic analyses showed greater suppression of IL-6.

Conclusion: Targeted IL-1 β inhibition with canakinumab effectively reduces cardiovascular events and all-cause mortality in IL-6-responsive CHIP carriers, with pronounced benefits in TET2-CHIP carriers.

Presenter:

Opeyemi Esther Taiwo

Olabisi Onabanjo University Teaching Hospital, Nigeria



Knowledge, Awareness and Antibiotic-Use Practices Regarding Antimicrobial Resistance Among Healthcare Students in Niger Delta University, Bayelsa State, Nigeria

Isaac Ayibadeimode Benefit Enekeme, Princewill Chukwunyem Igbojinwaekwu, Moses Ogbonnaya Amaefula, Ayibatonye David Dabrilagha, Chikezie Ebi padou Idayi, Ebiowo Wisdom Levi and Festus Peremobowei Sese

Department of Community Medicine, Faculty of Clinical Sciences, College of Health Sciences, Niger Delta University Nigeria

Background: Antimicrobial resistance (AMR) is a major global public health challenge driven largely by inappropriate antibiotic use. Healthcare students, as future healthcare professionals, require adequate knowledge, awareness, and responsible antibiotic-use practices to support effective antimicrobial stewardship. This study assessed the knowledge, awareness, and antibiotic-use practices related to AMR among healthcare students at Niger Delta University, Bayelsa State, Nigeria.

Methods: A descriptive cross-sectional study was conducted among 560 undergraduate healthcare students from Medicine, Nursing Science, Pharmacy, and Medical Laboratory Science programmes. Participants were selected using proportionate stratified sampling with systematic selection. Data were collected using a structured self-administered questionnaire and analysed using IBM SPSS Statistics version 27. Descriptive statistics and Pearson's chi-square test were used, with statistical significance set at $p < 0.05$.

Results: The mean age of respondents was 23.33 ± 3.85 years, with females comprising 60.7%. Overall, 51.2% of respondents demonstrated moderate knowledge, while 69.0% demonstrated good awareness of AMR. Most respondents recognised that antibiotic misuse or overuse contributes to AMR (90.5%) and that completing prescribed antibiotic courses reduces resistance (87.3%). However, important knowledge gaps persisted, with 43.8% believing that antibiotics are effective against viral infections. Among respondents who had used antibiotics, 41.8% obtained them without a valid prescription, while 79.3% reported stopping antibiotic treatment once they felt better. Academic programme was significantly associated with knowledge ($\chi^2 = 35.480$, $p < 0.001$) and awareness ($\chi^2 = 98.712$, $p < 0.001$).

Conclusion: Healthcare students demonstrated moderate knowledge and good awareness of AMR, but inappropriate antibiotic-use practices remained prevalent. Strengthening antimicrobial stewardship education across undergraduate

healthcare programmes and enforcing prescription-only antibiotic policies may improve responsible antibiotic use among future healthcare professionals.

Presenter:

Enekeme Isaac Ayibadeimode Benefit

Niger Delta University, Nigeria



The Potential of Alamandine in Airway Hyperresponsiveness in an Ovalbumin-Induced Asthma Model

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Universidade Federal de Ciências da Saúde de Porto Alegre
Brazil

Asthma is a chronic inflammatory airway disease characterized by variable air-flow obstruction and tissue remodeling. Alamandine (ALA), a counter-regulatory renin-angiotensin system (RAS) peptide with anti-inflammatory properties, remains poorly explored in allergic respiratory disease. This study evaluated prophylactic and therapeutic subcutaneous ALA (50 µg/kg/day) administration in an ovalbumin (OVA)-induced rat asthma model. Twenty male Wistar rats (n=5/group) were assigned to four groups: control (CO), OVA with prophylactic ALA (ALA-P; days 1–33), OVA with therapeutic ALA (ALA-T; days 12–33), and OVA-only control (OVA). Rats were sensitized (days 1–3) and challenged with aerosolized OVA (days 6–33). On day 34, ventilatory mechanics were assessed via FlexiVent, including methacholine challenge (12.5 mg/mL), following the experimental protocol illustrated in figure 1. Pulmonary inflammation was evaluated by eosinophil quantification; MrgD/Mas and AT1 receptor expression by immunohistochemistry and Western blot, respectively. OVA animals exhibited elevated post-challenge airway resistance and eosinophil infiltration ($p<0.0001$) compared to all other groups. ALA-T significantly attenuated these responses, restoring airway resistance and eosinophil counts to CO-group levels, whereas ALA-P showed only partial reduction. MrgD and Mas expression were elevated in OVA, reflecting compensatory RAS activation, but were reduced in both ALA-treated groups, with ALA-T achieving greater normalization. No significant differences in AT1 expression were observed among groups, suggesting ALA acts primarily through the alternative RAS axis rather than classical Ang II-AT1 signaling. The superior efficacy of the therapeutic regimen has translational relevance, since it more closely mirrors real-world clinical scenarios in which patients present after airway inflammation is already established. These findings support the ALA-MrgD/Mas axis as a promising therapeutic target for allergic airway diseases, particularly when conventional treatments provide insufficient control

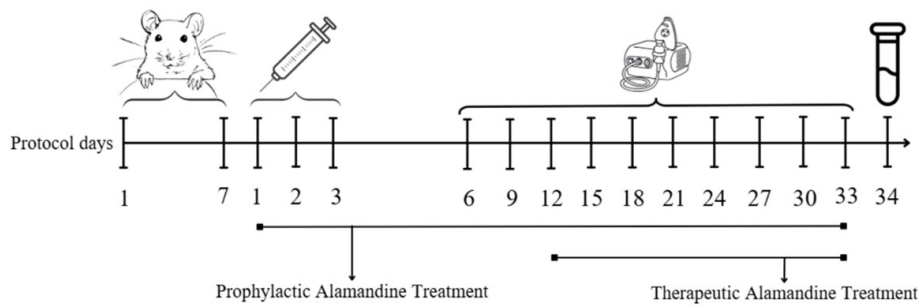


Figure 1. Experimental protocol timeline for the OVA-induced rat asthma model, showing acclimatization, sensitization, OVA challenge, alamandine treatment, and sample collection phases.

Presenter:

Vitória Nedel Rech

Universidade Federal de Ciências da Saúde de Porto Alegre, Brazil



Rethinking Proteinuria: Resolution of Donor Derived EXT2-Associated Membranous Nephropathy Following Renal Transplantation

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Purpose: Undiagnosed nephrotic range proteinuria in a deceased donor may be regarded as a relative contraindication for kidney transplantation (KT). With various possible etiologies of glomerulopathy, post transplant renal recovery is not well described.

Methods: We present a KT from a 19-year-old deceased donor with nephrotic syndrome of unknown etiology into a 75-year-old male recipient. The donor's initial creatinine was 0.96 mg/dL and peaked at 1.2 mg/dL, albumin at admission was 2.8, urine output was recorded between 20cc to 700cc per hour, and urine analysis was remarkable for proteinuria >300mg/dL. At the time of kidney procurement, renal biopsies of the right and left kidneys demonstrated 0% glomerular sclerosis, and <5% interstitial fibrosis and tubular atrophy. Published case reports have described the resolution of immune complex-mediated glomerulopathies post-transplant; however long-term proteinuria has been observed due to chronic transplant glomerulopathy. Given the donor's young age and unremarkable biopsy, we anticipated renal recovery and elected to proceed with KT. Following graft re-perfusion, a biopsy was performed; pathology indicated EXT2-associated membranous glomerulopathy.

Results: The recipient's pre-operative creatinine was 3.56 mg/dL, peaked at 5.79 mg/dL in the immediate peri-operative period and improved to 0.96 mg/dL within two months of transplant. Pre-operative albumin was 2.7 and improved to 4.4 within four months of transplant. Urine protein/creatinine ratio was monitored with a peak of 11.8 within one month post-transplant and improved to 2.3 within four months post-transplant. Within six months post-transplant, the patient's lab results continued to demonstrate normal renal function and resolution of proteinuria.

Conclusion: EXT1/EXT2-associated membranous nephropathy is histologically characterized by immune complex deposition along the glomerular basement membrane, and most commonly associated with autoimmune pathologies

including pure class V lupus nephritis. Observational studies conducted with serial allograft biopsies have shown progressive resolution of immune complexes. This resolution may be facilitated by removing the kidney from a donor's antigenic environment and transplanting into a recipient's non-immunogenic environment coupled with immunosuppressive therapy. Donor membranous nephropathy may show remission following KT; however, long term observation of the recipient is paramount.

Presenter:

Mike Fruscione

Hackensack Meridian Hackensack University Medical Center, USA



Polycomb Pathway Targeting Enhances Cisplatin Response and Reveals a Potential Role for the Tumor Immune Microenvironment in Testicular Germ Cell Tumors

Doha Shokry, Ratnakar Singh and Michael Spinella

Department of Comparative Biosciences, University of Illinois
Urbana-Champaign, USA

Testicular germ cell tumors (TGCTs) are among the most curable solid malignancies due to their exceptional sensitivity to cisplatin-based chemotherapy. However, a subset of patients develops cisplatin-resistant disease, for which effective treatment options remain limited. Although epigenetic mechanisms have been implicated in cisplatin response, the contribution of the tumor microenvironment and host immune response to therapeutic sensitivity remains poorly understood.

We investigated the role of polycomb pathway regulation in cisplatin response and examined tumor and host transcriptional responses following epigenetic therapy in cisplatin-resistant TGCT models. Pharmacologic inhibition of the H3K27 demethylases KDM6A and KDM6B with GSK-J4 enhanced cisplatin sensitivity, while genetic targeting of KDM6A/KDM6B similarly sensitized both cisplatin-sensitive and resistant TGCT cells. Transcriptomic analysis demonstrated that KDM6A/KDM6B targeting enhanced the transcriptional response to cisplatin, including activation of p53-associated programs and changes in chromatin remodeling pathways. In xenograft models, combination treatment with GSK-J4 and cisplatin produced marked tumor regression and sustained tumor-free survival, with a substantially greater therapeutic effect than observed *in vitro*.

To investigate this difference, RNA sequencing of xenograft tumors was performed with species-specific separation of human tumor-derived and mouse host-derived transcripts. While human tumor transcriptional responses were primarily associated with polycomb pathway targeting, the mouse host transcriptome showed enrichment of immune and inflammatory pathways, particularly innate immune response programs. Tumor microenvironment deconvolution further indicated a prominent monocyte/macrophage population within the xenografts.

Together, these findings suggest that polycomb pathway targeting not only directly enhances tumor cell sensitivity to cisplatin but may also be associated with changes in the tumor immune microenvironment. These results highlight the potential importance of tumor–host interactions and innate immune responses in determining therapeutic response in cisplatin-resistant TGCTs.

Presenter:

Doha Shokry

University of Illinois Urbana-Champaign, USA



An Update on Stevens Johnson Syndrome/Toxic Epidermal Necrolysis, A Drug-Induced, Immune-Mediated Severe Cutaneous Adverse Reactions

Omer Iqbal

Loyola University Stritch School of Medicine, USA

Stevens Johnson Syndrome/Toxic Epidermal Necrolysis (SJS/TEN) are rare life-threatening, drug-induced, immune-mediated Severe Cutaneous Adverse Reactions (SCARs). It is a systemic disease involving multiple organs characterized by the development of mucocutaneous lesions and extensive sloughing of the skin, which may lead to development of infections, sepsis, multiorgan dysfunction and death. Eyes are most often involved and may manifest keratoconjunctivitis, symblepharon and corneal blindness requiring amniotic membrane transplantation. Survivors of SJS/TEN may have long-term ocular sequelae. Pathogenesis is not completely known and hence the treatment is symptomatic. Multiple cytokines are known to play a key role in pathogenesis. Interleukin-1 β , a key stimulator of T-cell function, may play a crucial role in promoting inflammation. Our laboratories have reported earlier on the expression of NLRP3, IL-1 β , IL-6, RIPK3, Galectin-7, CCL27, and Janus Kinase in the skin biopsy slides from confirmed patients with SJS/TEN using immunofluorescence microscopy. This presentation will discuss the pathogenesis, clinical signs, and symptoms of patients with SJS/TEN.

Presenter:

Omer Iqbal

Loyola University Stritch School of Medicine, USA



Imaging Immune Cell Metabolism *in situ* in a Live Organism

Veronika Miskolci

Department of Microbiology, Biochemistry and Molecular Genetics, New Jersey Medical School, Rutgers Health, Rutgers University, USA

Immune cells undergo profound metabolic reprogramming to fuel their effector functions. Tools to study the intracellular metabolism of immune cells within a native microenvironment in a live animal are limited. Using larval zebrafish models of injury, we show that autofluorescence lifetime imaging microscopy of endogenous metabolic coenzymes, NAD(P)H and FAD, captures dynamic changes in macrophage intracellular metabolism within the native wound microenvironment during tissue repair. We validate this method using pharmacological and genetic approaches, as well as in additional biological contexts. Optical metabolic imaging offers a label-free, non-invasive approach to assessing intracellular metabolism at the single-cell level in a live animal and can resolve heterogeneity within a cell population with spatiotemporal resolution, making it a valuable tool with broad applicability in the field of immunometabolism.

Presenter:

Veronika Miskolci

Rutgers University, USA



One Eye, Two Microliters: Ultra-Sensitive NfL Quantification in Mouse Aqueous Humor Using NULISA

Jeongsup Shim and **Saloumeh K. Fischer**

Genentech, USA

Neurofilament light chain (NfL) is a well-established biomarker of neuroaxonal injury and is increasingly used to assess neuronal damage and treatment response. However, its measurement in volume-limited matrices such as mouse aqueous humor (AH) remains technically challenging. With only 2–6 μL of AH typically available per eye, conventional immunoassays may lack sufficient sensitivity or require pooling samples across multiple animals. This limits the ability to assess individual biological variability, reduces the information obtained from each animal, and can increase overall animal use.

We developed and qualified a NULISA-based NfL HomeBrew assay to enable ultra-sensitive quantification of NfL from individual mouse AH samples. Across five independent qualification runs, the assay demonstrated an analytical range of 0.061–250 pg/mL , with an analytical lower limit of quantification (LLOQ) of 0.061 pg/mL and acceptable accuracy and precision across the assay range. Comparison with established NfL platforms demonstrated improved sensitivity relative to Simoa and substantially greater sensitivity than Ella, supporting the application of NULISA to matrices where both sample volume and biomarker abundance are highly constrained.

Importantly, the assay enabled reliable NfL quantification using only 2 μL of AH from a single mouse eye. Nine of ten individual AH samples were quantifiable, with measured NfL concentrations ranging from 0.335 to 12.17 pg/mL .

These findings demonstrate that NULISA enables sensitive, individual-level NfL measurement from ultra-low-volume ocular samples while eliminating the need for sample pooling. This capability preserves inter-animal biological variability, enables more data-rich preclinical studies, and maximizes the scientific information obtained from each sample. By enabling single-eye analysis, this approach also has the potential to reduce animal use by up to eightfold while expanding opportunities to investigate neuroaxonal injury biomarkers in pre-clinical ocular and neurodegenerative disease models.

Presenter:

Jeongsup Shim

Genentech, USA



Spatial Multi-Omics Reveals Distinct Stromal-Immune Responses in Partial and Poor Responders to Neoadjuvant Therapy in Pancreatic Ductal Adenocarcinoma

Xiaofei Zhang

Department of Pathology, NYU Grossman Long Island School of Medicine, USA

Neoadjuvant therapy (NAT) is increasingly being used in pancreatic ductal adenocarcinoma (PDAC); however, most patients exhibit only partial or poor responses. Current pathologic tumor regression grading (TRG) schemes primarily evaluate residual tumor burden but often overlook changes in the stromal and immune contexture, limiting their prognostic accuracy and clinical relevance. To address this gap, we performed integrated spatial pathomics and transcriptomics analyses of tumor and stromal compartments from 36 PDAC patients including 13 NAT-naïve, 13 partial responders (AJCC/CAP-TRG2), and 10 poor responders (TRG3) to NAT. Findings were validated using an independent single-cell spatial transcriptomics dataset. Surprisingly, even poor responders exhibited a substantial (~50%) tumor burden reduction; nonetheless, their survival outcomes were significantly worse than NAT-naïve and partial responder patients, underscoring the limitations of solely using residual tumor burden for prognostication. Spatial pathomics revealed that partial and poor responders exhibit indistinguishable cancer cell cytomorphometric characteristics but distinct stromal and immune landscape. Partial responders showed higher collagen proportionate area; enriched cancer-associated fibroblasts, CD8⁺ T cells, B cells, dendritic cells, more tertiary lymphoid structures; and closer CD8⁺ T cell-tumor cell proximity. In contrast, poor responders showed increased tumor-associated neutrophils and neutrophil extracellular traps. Spatial transcriptomics revealed that in cancer cells partial responders upregulated MAPK, TGF- β , TNF- α , HIF- α , and apoptotic signaling, whereas poor responders exhibited broad activation of chemokine and cytokine signaling. In the stroma, partial responders demonstrated upregulated antigen presentation, MHC class II signaling, and complement activation, where poor responders showed enhanced chemotactic and inflammatory signaling. Importantly, high CPA and intratumoral B-cell density were associated with improved survival. These findings suggest that partial and poor responses to NAT reflect not just different degrees of tumor reduction but also distinct immune-oncologic states. Incorporating evaluation of stromal and immune features into TRG assessments may improve prognostic accuracy and guide more personalized therapeutic strategies.

Presenter:

Xiaofei Zhang

NYU Grossman Long Island School of Medicine, USA



Adequate Simulation Methods for Random SIR, SIS and SIER Models Based on SDEs

Henri Schurz

Department of Mathematics, Southern Illinois University, USA

The objective is to discuss adequate mathematical methods to simulate random virus dynamics based on stochastic differential equations (SDEs). Since random environmental fluctuations are obviously present in physically relevant modeling of virus dynamics, one has to take into account random dynamical systems to model them. These systems are nonlinear and possess state-dependent random noise. By well-known standard central limit theorems (CLTs) one may refer to locally Gaussian, but highly nonlinear intensities of the underlying noise. That naturally leads to SDEs and their discrete time analogs. However, the challenge arises that real-world biological dynamics of virus populations live on bounded domains by naturally limited resources. We are able to construct and verify the consistency, boundedness (stability), invariance on prisms and convergence of adequate discretizations of those models, which provides the mathematical foundations of simulated virus models on modern computer systems. For this purpose, we present the class of balanced implicit methods, which we invented to tackle the associated nonlinear problems since 1992. Those methods allow to simulate and predict any desired mathematically based functional for evaluations and eventual medical decision making based on those SIR, SIS or SIER of infectious diseases or similar mathematical models for reactions of immune systems.

Presenter:

Henri Schurz

Southern Illinois University, USA



Efficacy of Vitamin C and *Chlorella pyrenoidosa* as Coadjuvants in Reducing Blood Lead Levels (BLL) among Occupationally Exposed Workers in Ecuador: A 6-Year Longitudinal Study

Alywin Hacay Chang-León and Antonio Gómez-García

Universidad Espíritu Santo, Ecuador

Background: Occupational exposure to lead dust is a critical public health challenge in the manufacturing sector, particularly in developing economies. High blood lead levels (BLL) are traditionally managed through medical intervention; however, environmental and behavioral engineering controls offer a sustainable alternative for long-term risk mitigation.

Objective: The objective of this study was to evaluate the clinical effectiveness of Vitamin C and *Chlorella pyrenoidosa* as nutritional coadjuvants in reducing blood lead levels (BLL) among an occupationally exposed workforce in Ecuador.

Methodology: A 6-year longitudinal study was conducted with 156 workers exposed to lead-intensive processes in Ecuador. For participants with BLL exceeding 22 ug/dl, either Vitamin C as a primary antioxidant or *Chlorella pyrenoidosa* as a strategic alternative for workers with gastrointestinal sensitivities or contraindications to ascorbic acid was administered. Effectiveness was measured using the Odds Ratio (OR) with a 95% Confidence Interval (CI).

Results: Statistical analysis revealed a significant protective effect of Vitamin C, with an OR=0.28; CI 95% [0.14–0.60], indicating a robust correlation with reduced lead burden. *Chlorella* also demonstrated a protective trend with OR=0.68; CI 95% [0.24–1.98], however this association did not reach statistical significance within the specific cohort.

Conclusion: Vitamin C serves as a highly effective and statistically significant coadjutant in reducing blood lead levels. While *Chlorella* provides a necessary biocompatible alternative for workers with digestive limitations, its independent efficacy requires further large-scale validation. These findings support the integration of immunological reinforcement as a primary and safer protocol for managing occupational heavy metal toxicity, prioritizing worker well-being and reducing the need for more invasive clinical procedures.

Presenter:

Alywin Hacay Chang-León

Universidad Espíritu Santo, Ecuador

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