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9th International Symposium on Infectious Diseases and Vaccine

August 21–22, 2026

Singapore

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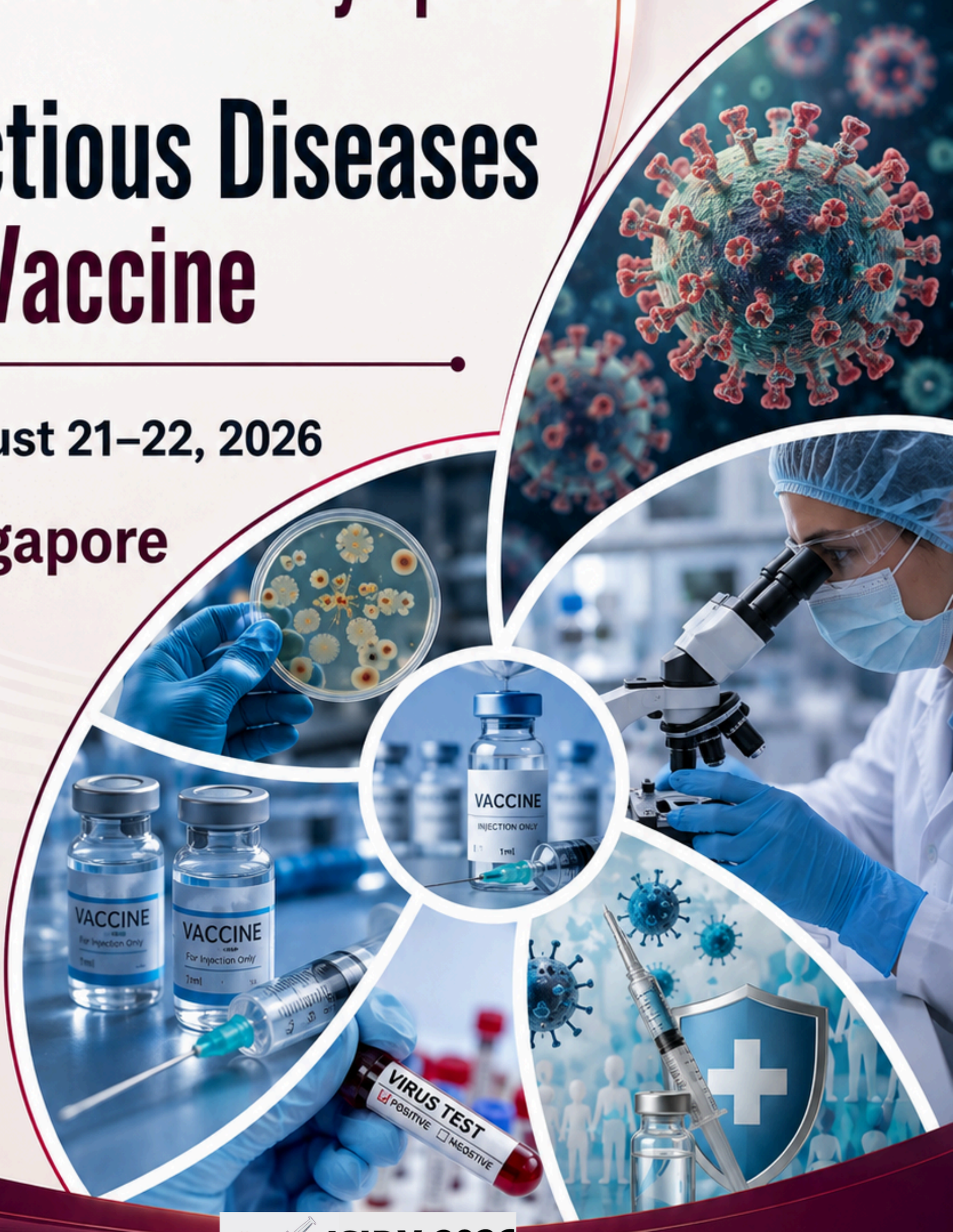

ISIDV-2026
August 21–22 | Singapore

ISBN: 978-1-917892-55-1

SCIENTIFIC PROGRAM

International Conference

DAY-1 (AUGUST 21, 2026)

09:00-09:30 **Registrations & Opening Remarks**

Technical Session - I

09:30-09:55

Title: CRISPR Cas9 Gene Editing for Sickle Cell Disease
Dr. Jennifer Domm, Sarah Cannon Pediatric Hematology, United States

09:55-10:20

Title: SYN023 mAb Cocktail for Rabies Prophylaxis
Dr. Eric I Tsao, Synermore Biologics, China

10:20-10:45

Title: A Coupled Infection–ROS–Quantum Emission Model for Ultraweak Photon Emission in Infectious Disease Dynamics
Dr. Horace Crogman, California State University Dominguez Hills, United States

10:45-11:15 Networking Break + Group Photo

11:15-11:40

Title: Hha toxin regulates diverse phenotypes of uropathogenic Proteus mirabilis
Dr.Shwu-Jen Liaw, National Taiwan University, Taiwan

SCIENTIFIC PROGRAM

International Conference

Day 01
August 21, 2026

11:40-12:05

Title: Combination Treatment with Synthetic gRNA/Cas12a and gRNA/Cas9 Ribonucleoproteins Disrupts HIV Replication and Expression
Prof. Zhi Q. Yao, East Tennessee State University College of Medicine, United States

12:05-12:30

Title: Robust immunogenicity and protection efficacy of a microneedle patch-based Flu-RSV combination vaccine fabricated using partition-loading strategy
Dr.Bin Wang, Advaccine Biotechnology Co., Ltd., China

12:30-12:55

Title: COVID-19 Vaccine Acceptance, Knowledge, Attitudes and Socio-Demographic Factors of General Population: A Mixed-Methods Study
Prof. M. J. Kumari, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), India

12:55-13:00

Title: Near-Infrared Regulated Engineered EcN System for Gut-Brain Axis Modulation and Anxiety Therapy
Dr. Xuejun Wang, Jinan Microecological Biomedicine Shandong Laboratory, China

13:00-13:05

Title: AI-Assisted Design of Tough and Antioxidant Polysaccharide Fiber Materials
Dr. Wang Liping, Jiangnan University, China

Lunch (13:05-14:00)

SCIENTIFIC PROGRAM

International Conference

Day 01
August 21, 2026

Technical Session - II

14:00-14:25

Title: Hepatitis E Virus Infection: Circulation, Molecular Epidemiology, and Impact on Global Health
Dr. James Wai Kuo Shih, Xiamen Innovax Biotech CO. Ltd, China

14:25-14:50

Title: Waka Ama as a Maori Public Health Intervention for Wahine Hauora
Mrs. Kay Berryman, Waikato University, New Zealand

14:50-15:15

Title: Expanded Glycan Recognition Shapes Tissue Tropism and Zoonotic Risk of Clade 2.3.4.4b H5Ny Avian Influenza Viruses
Prof. Hao Song, Beijing Ditan Hospital Capital Medical University, China

15:15-15:40

Title: Molecular Characterization of Wolbachia Endosymbionts and their association with Canine Dirofilariasis in Colombo District, Sri Lanka
Dr. Koshila Ranasinghe, Faculty of Science, University of Kelaniya, Sri Lanka

Refreshment Break (15:40-16:00)

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International Conference

Day 01
August 21, 2026

16:00-16:25

Title: Detection Limits of PaRTI-SeqTM in Host-Depleted Blood: A Biological Perspective Using Mycobacterium Smegmatis
Ms. Shivadarshini Ramachandran, Northumbria University, Singapore

16:25-16:50

Title: General Anesthesia in Patient with Hutchinson-Gilford Progeria Syndrome: Two Case Reports of Dental Treatment in the One Patient
Dr. Maksym Synytsyn, Clinical Hospital Feofania, Ukraine

16:50-17:15

Title: A Multifunctional Anti-Influenza Peptide Targeting Viral Fusion and Nucleoprotein
Prof. Hanjun Zhao, Fudan University, China

17:15-17:40

Title: Functional Versus Structural Renal Outcomes of SGLT2 Inhibitors in Autosomal Dominant Polycystic Kidney Disease: A Systematic Review of Preclinical and Clinical Evidence
Mrs. Faiza Naeem, Universiti Sains Malaysia, Malaysia

17:40-17:50

Title: KGN-Loaded Polysaccharide Hydrogel Promotes Cartilage Protection and Repair in Post-Traumatic Osteoarthritis
Dr. Wang Liping, Jiangnan University, China

SCIENTIFIC PROGRAM

International Conference

Day 01
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17:50-18:15

Title: Gut metagenomes of Asian octogenarians reveal microbial species promoting healthy aging
Dr. Aarthi Ravikrishnan, A*STAR Skin Research Labs, Singapore

Day-01 Concludes

SCIENTIFIC PROGRAM

International Conference

DAY-2 (AUGUST 22, 2026)

Technical Session - I

09:00-09:25

Title: Defining the Targets and Protective Functions of Malaria Immunity to Design Next Generation Vaccines

Dr. James-Beeson, Burnet Institue, Australia

09:25-09:35 (E-POSTER)

Title: Association between Obstructive Sleep Apnea and Cardiovascular Event Risk: A 5-Year Prospective Cohort Study Based on a Single-Center Health Examination Population

Dr. Hang Yang, Chinese People's Liberation Army Ground Force, China

09:35-09:45 (E-POSTER)

Title: High-Intensity Interval Training Improves Functional Exercise Capacity and Ventilatory Efficiency in Moderate-to-Severe COPD

Dr. ShuMin Jiang, Chinese People's Liberation Army Ground Force, China

09:45-10:10

Title: Functional Versus Structural Renal Outcomes of SGLT2 Inhibitors in Autosomal Dominant Polycystic Kidney Disease: A Systematic Review of Preclinical and Clinical Evidence

Mrs. Faiza Naeem, Universiti Sains Malaysia, Malaysia

10:10-10:35

Title: Immunological response of using emulsifying elongation factor 1 alpha of Plasmodium falciparum-based vaccines in complete Freund's adjuvant

Prof. Seon-Ju Yeo, Seoul National University, South-Korea

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10:35-11:00

Title: Innate and adaptive immune responses in Hepatitis C virus infections
Dr. Yutaka Kishida, Osaka Kaisei Hospital, Japan

11:00-11:25

Title:Recent advances in engineering in vitro-assembled beak and feather disease virus-like particles encapsulated with biomolecules and its application
Prof. Chi-Young Wang, National Chung Hsing University, China

11:25-11:50

Title: Vibrio cholerae Non-O1, Non-O139 Identified in Bacteremic Skin Infection Patient with Multiple Skin Necrosis
Dr. Ibrahim Alhabib, Imam Abdulrahman Bin Faisal University, Saudi Arabia

11:50-12:15

Title: Assessing the Impact of COVID-19 Vaccines on Sickle Cell Anaemia Patients
Dr. Jehad A. Aldali, Imam Mohammad Ibn Saud Islamic University (IMSIU), Saudi Arabia

12:15-12:40

Title: Principles and Standards for Managing Integration and Comprehensive Interoperability in Intelligent and Ethical Transformed Health Ecosystems
Dr. Bernd Blobel, University of Regensburg, Germany

SCIENTIFIC PROGRAM

International Conference

Day 02
August 22, 2026

12:40-13:05

Title: Preventing the spread of germs when emptying urine drainage bags in home care
Dr. Uwe Ernsberger, Max Planck Institute for Brain Research, Germany

13:05-13:30

Title: The use of angiotensin-converting enzyme inhibitors in hospitalised patients with COVID-19 is associated with a lower risk of mortality
Dr. Mykola Khalangot, Infectious Diseases Hospital, Kostiantynivka, Ukraine

13:30-13:55

Title: Monosaccharide Profiling of Lipopolysaccharide A Novel Approach for Identification of Antigenically Similar Leptospira and Its One Health Implications
Dr. Aleksandra Lewicka, University of Agriculture in Krakow, Poland

13:55-14:20

Title: Peptidylarginine deiminase: a virulence factor of P. ingivalis and a candidate target to antimicrobial therapy of periodontitis
Dr. Katarzyna Gawron, Medical University of Silesia in Katowice, Poland

14:20-14:45

Title: The Role of Digital Health Tools in Bridging Health Inequality Gaps Among Vulnerable Women in Africa: A Scoping Review
Dr. Grace Hicks, Liverpool John Moores University|UNICAF, UK

SCIENTIFIC PROGRAM

International Conference

Day 02
August 22, 2026

14:45-15:10

Title: Overcoming the intractable HIV latency for virus elimination through sustained autologous immune responses
Prof. Prasad.S. Koka, Biomedical Research Institute of Southern California, United States

15:10-15:35

Title: A universal vaccine for cancer and infectious diseases
Prof. Eli Gilboa, University of Miami School of Medicine, United States

Day-02 Concludes

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9th International Symposium on
Infectious Diseases and Vaccine

August 21-22, 2026 | Singapore

Jennifer A. Domm, MD, MSCI*

Sarah Cannon Pediatric Hematology/Oncology & Cellular Therapy @ TriStar Centennial, Nashville, TN, USA

CRISPR Cas9 Gene Editing for Sickle Cell Disease

Exagamglogene autotemcel (exa-cel) is a non-viral cell therapy that reactivates fetal hemoglobin via ex-vivo CRISPR-Cas9 gene-editing of autologous CD34+ hematopoietic stem cells at the erythroid-specific enhancer region of BCL11A gene in patients with severe sickle cell disease (SCD). The pivotal CLIMB SCD-121 trial met primary and key secondary endpoints. CLIMB SCD-121 is an ongoing, 24-mo, phase 3 trial of exa-cel in pts age 12-35y with SCD and a history of ⩾2 VOCs/y in 2y prior to screening. Primary efficacy endpoint is proportion of pts free of severe VOCs for ⩾12 consecutive months (mos) (VF12); key secondary efficacy endpoints include proportion of pts free from inpatient hospitalization for severe VOCs for ⩾12 consecutive mos (HF12). 42 pts with SCD (age 21.2 [range 12-34]y; 12[28.6%] age ⩾12 to <18y; 4.2 VOCs/y at baseline) received exa-cel. Following infusion, all pts engrafted neutrophils and platelets (median 27 and 34.5 days, respectively). 19/20 (95.0%) pts evaluable for primary endpoint were free of VOCs for ⩾12 consecutive mos (VF12; 95% CI, 75.1% to 99.9%; P<0.0001), 20/20 (100%) were free from hospitalizations for VOCs for ⩾12 consecutive mos (HF12; 95% CI, 83.2 to 100.0; P<0.0001). Exa-cel treatment resulted in early and sustained increases in Hb and HbF leading to elimination of VOCs in 95% of pts, elimination of inpatient hospitalization for VOCs in 100% of pts and improved QOL. Safety profile of exa-cel was consistent with myeloablative busulfan conditioning and autologous transplantation. Exa-cel has potential to deliver a one-time functional cure to pts with severe SCD.

Biography

Jennifer Domm, MD, MSCI is medical director of Pediatric Hematology/Oncology at Sarah Cannon Research Institute and TriStar Centennial Children's Hospital in Nashville, TN, USA. Dr. Domm completed her MD degree at Vanderbilt University followed by pediatric residency and pediatric hematology/oncology/stem cell transplant fellowship at Vanderbilt University. She was Associate Professor at Vanderbilt Children's Hospital until 2015 when she joined Sarah Cannon Research Institute to co-found the pediatric program. Dr. Domm has authored or co-authored more than 50 peer-reviewed manuscripts. She is a co-investigator for the clinical trial using CRISPR-Cas9 gene editing for patients with sickle cell disease and transfusion-dependent thalassemia.

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Horace T. Crogman1, Gisela Alvarez1, and Kwame Eshun2

1California State University Dominguez Hills, 1000 E. Victoria St. Carson CA 90747 USA.
2Department of Biology, Sierra College, Rocklin, CA 95677, USA

A Coupled Infection–ROS–Quantum Emission Model for Ultraweak Photon Emission in Infectious Disease Dynamics

Understanding the relationship between infection-induced oxidative stress and measurable biophotonic signals remains a key challenge in infectious disease research. In this work, we present a multiscale theoretical framework that links infection dynamics, immune activation, reactive oxygen species (ROS) production, and ultraweak photon emission (UPE).

The model integrates three coupled components: (i) infection-driven immune activation and ROS dynamics, (ii) nonlinear excitation of an effective quantum emitter by emission-relevant ROS, and (iii) open quantum system dynamics governing photon emission under biologically relevant decoherence. This framework establishes a mechanistic pathway from intracellular biochemical processes to externally measurable optical signals.

The model is calibrated using experimentally reported ROS fold-changes for healthy, COVID-19, and sepsis conditions, ensuring biologically realistic oxidative-stress regimes. Within this calibrated framework, simulations predict the corresponding photon emission response across a range of infection severities.

Results reveal that large increases in oxidative stress produce only modest increases in photon emission due to nonlinear saturation of the excitation field and finite emitter population. This behavior is quantified through a sublinear scaling relationship between ROS and emission, demonstrating that UPE acts as a compressive encoding of oxidative dynamics rather than a proportional or amplified signal.

These findings suggest that UPE carries information primarily in its temporal structure and nonlinear response characteristics, rather than absolute intensity alone. The proposed framework provides a predictive basis for interpreting infection-induced biophotonic signals and supports the development of label-free optical approaches for monitoring immune and oxidative processes.

Keywords: Ultraweak photon emission, Reactive oxygen species, Infection dynamics, Biophotonics, Nonlinear dynamics, Quantum emitter model

Biography

Horace T. Crogman is a researcher in physics at California State University, Dominguez Hills, with interests in biophotonics, nonlinear dynamics, and quantum-inspired modeling of biological systems. His work focuses on developing multiscale theoretical frameworks that connect infection dynamics, immune activation, and oxidative stress to measurable optical signals such as ultraweak photon emission (UPE). He integrates concepts from statistical physics, open quantum systems, and biological modeling to investigate how intracellular biochemical processes give rise to emergent biophysical observables. His current research explores the use of UPE as a noninvasive probe of infection and immune response, with potential applications in label-free diagnostics and real-time monitoring of oxidative stress. He is particularly interested in bridging theoretical models with experimental measurements in complex biological systems.

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Shwu-Jen Liaw, Yueh-Jung Chao

Department of Clinical Laboratory Sciences and Medical Biotechnology, College of Medicine, National Taiwan University, Taipei, Taiwan

Hha toxin regulates diverse phenotypes of uropathogenic Proteus mirabilis

To disclose Proteus mirabilis copper detoxification mechanisms, we performed Tn5-mutagenesis and an hha gene-disrupted mutant was isolated, exhibiting increased copper sensitivity. We investigated the role of Hha in P. mirabilis, focusing on the virulence aspects.

Assays of copper susceptibility, swarming/swimming, biofilm formation, persister cell formation, killing by macrophages, adhesion, invasion, urothelial cell cytokine expression, wax moth virulence, were performed. The invertible element assay, TEM, EMSA and SDM were used to examine MR/P fimbria expression, flagellar production, Hha-flhDC promoter binding and the importance of Hha 13th amino acid cysteine (Hha C13), respectively. RT-PCR was conducted to demonstrate the tomB-hha operon. Hha-related gene expression and regulation were elucidated by RT-qPCR and transcriptional reporter assay. We showed P. mirabilis hha and tomB form an operon and TomB antagonized Hha toxicity. The Hha was involved in copper susceptibility, swimming/swarming, biofilm formation and persister cell formation. The hha mutant had lower adhesion/invasion abilities, triggered higher cytokine expression of urothelial cells and was more sensitive to macrophage killing and attenuated in wax moth. P. mirabilis Hha C13 is crucial in toxicity and Hha-TomB interaction. Deletion of hha reduced relA/rpoS expression. CpxR controlled hha promoter activity. Finally, copper was the signal to inducecpxR/hha expression. In conclusion, we disclosed that P. mirabilis Hha of the toxin-antitoxin system (TA) participates in virulence and its regulation by copper-sensing CpxR. This work provides Hha as a potential drug target for combating P. mirabilis urinary tract infections and opens new perspectives for studying TA aiming at controlling bacterial virulence.

Keywords: Hha toxin, virulence, uropathogenic P. mirabilis

Biography

I am a professor of Department of Clinical Laboratory Sciences and Medical Biotechnology, College of Medicine, National Taiwan University, Taipei, Taiwan. Our lab has been engaged in the study of uropathogenic Proteus mirabilis, investigating drug resistance, virulence factor expression, pathogenesis, gene regulation and signal transduction for more than 10 years. P. mirabilis Is an important pathogen of the urinary tract. We found that the bacterial two-component system, small regulatory RNAs and sigma factors such as RpoS, RpoN and RpoE are involved in the virulence of P. mirabilis. I was always invited as a conference speaker for our significant findings. Recently, we found copper homeostasis is associated with virulence factor expression.

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Bin Wang, Ph.D.

Founder &. Chief Scientific Advisor, Advaccine Biopharmaceuticals Co. LTD, Suzhou, China

Robust immunogenicity and protection efficacy of a microneedle patch-based Flu-RSV combination vaccine fabricated using partition-loading strategy

The development of combination vaccines is often hindered by intra-vaccine interference. This study aimed to develop a partition-loading strategy for fabricating microneedle array patch (MAP)-based Flu-RSV combo vaccines to overcome this issue. Vaccine-laden dissolving MAPs (D-MAPs) were fabricated using a two-step micro-molding process with polyvinyl alcohol as the major excipient. A partition-loading strategy was adopted to ensure the nonoverlapping distribution of a trivalent split virus influenza (Flu) vaccine and a recombinant preF5 protein of respiratory syncytial virus (RSV) in separate patch sectors. Serum samples from BALB/c mice were assessed for binding and neutralizing antibody titers, followed by live virus challenge studies. Results showed that while intramuscularly administered standalone vaccines induced strong IgG responses, significant intra-vaccine interference occurred when the two vaccines were co-administered in a premixed form. However, when loaded onto nonoverlapping sectors of single D-MAPs for skin vaccination, this interference was completely overcome, resulting in robust binding and neutralizing antibody induction. Furthermore, the MAP-FR vaccine proved efficacious against both viruses in challenge studies. These results provide proof-of-concept evidence for the potential usefulness of partition-loaded MAPs in developing effective combo-vaccines without intra-vaccine interference.

Keywords: Microneedle, dissolvable, partitional loading, combo-vaccines, self-discipline, good

Biography

Dr. Bin Wang is the Founder and Chairman of Advaccine Biotechnology Co., Ltd., Distinguished Professor at Fudan University, and Chairman of the Nucleic Acid Vaccine Branch of the China Vaccine Industry Association. Holding a Ph.D. from the University of Cincinnati College of Medicine, Dr. Wang has over three decades of pioneering leadership in vaccine innovation.

In the 1990s, he co-invented foundational DNA vaccine technology with Professor David Weiner at the Wistar Institute and presided over the world's first DNA vaccine clinical trial. Under his leadership, Advaccine has developed an advanced RSV preventive vaccine and a proprietary Dissolvable Microneedle Array Patch (D-MAP) delivery platform supported by the Gates Foundation.

Dr. Wang has authored over 180 peer-reviewed publications and holds 57 patents. He has successfully transferred nine vaccine projects to clinical applications, including an RSV vaccine completing Phase II trials and a therapeutic hepatitis B vaccine demonstrating a 40% functional cure rate. His D-MAP platform has achieved FDA approval for commercial acne treatment, advancing global vaccine accessibility.

doi.org/10.51219/URForum.2026.Bin-Wang

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Dr. M. J. Kumari, Professor cum Principal (Ag.)

College of Nursing, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Puducherry, India

Co-authors:
1. Mrs. Sindhuja K, College of Nursing, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Puducherry, India.
2. Dr. Molly Mary Thabah, Professor of Medicine & Head, Department of Clinical Immunology, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Puducherry, India.

COVID-19 Vaccine Acceptance, Knowledge, Attitudes and Socio-Demographic Factors of General Population: A Mixed-Methods Study

The COVID-19 pandemic devastate the world. Vaccination provides the best hope for controlling the pandemic. Understanding vaccine acceptance is essential because vaccine hesitancy is high and vaccination coverage is low. An explanatory mixed-methods approach was used. Convenience sampling was used to select 369 participants who met the inclusion and exclusion criteria. Data were collected using a structured interview method. The knowledge and attitudes of the participants were assessed using a self-structured questionnaire. An in-depth interview was conducted to explore vaccine hesitancy and collect qualitative data. Among the 369 respondents, 61.2% had moderate knowledge, 31.2% had adequate knowledge, 33.6% had a sensible attitude, and 65.3% had a favorable attitude toward the COVID-19 vaccine. There was a positive correlation between knowledge and attitude (r=0.114, p=0.029). People's opinions about the COVID-19 vaccine included preventing infection, developing immunity, being safe and protecting people, vaccine misbelief, non-existence of the virus, and belief in Ayurveda medicine. People hesitate to vaccinate due to fear of side effects (fever, headache, and paralysis), age-related concerns, death, health issues, fear of the needle, lack of vaccine knowledge, awareness, and bad influence of media. Participants had moderate knowledge and favorable attitudes toward COVID-19 vaccine acceptance. The most significant factor for vaccine hesitancy was the occurrence of mild or severe side effects following vaccination. This may be the biggest challenge in the global response to the pandemic.

Keywords: COVID-19, Vaccination, Acceptance, Attitude, Knowledge

Biography

Dr. M.J. Kumari Holds a Ph.D. in Nursing, M.Phil., and M.Sc. (N), with over 28 years and 3 months of teaching experience, including 23 years of postgraduate teaching and research experience. Has published 69 research papers in national and international journals and authored three books: Adult Health Nursing, Diabetic Foot Ulcer, and Reproductive Health. Has successfully completed several specialized short-term courses, including Basic Life Support (BLS), Advanced Cardiovascular Life Support (ACLS), Health Research Publication, and the JIPMER Advanced Course in Research Methodology, among others. Serves as a Trainer for the Karmayogi iGOT Programme under the Government of India and has been the Course Coordinator for three Ministry-funded short-term courses. Has completed 25 intramural research projects, is an active member of several professional organizations, serves on the editorial boards of both national and international journals, and has organized numerous national and international conferences and workshops.

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J. Wai Kuo Shih, XiuJuan Wang, XiaoShan Yu, QiuFen Zhang, C. XiaoLin Huang, C. JingJing Zhai, Tom WT Shen

1California State University Dominguez Hills, 1000 E. Victoria St. Carson CA 90747 USA.
2Department of Biology, Sierra College, Rocklin, CA 95677, USA

Latest Development of Hepatitis E Vaccine; its Safety and Efficacy

Hepatitis E virus (HEV) remains a major global cause of acute viral hepatitis and results in significant morbidity and mortality-especially among pregnant women, immunocompromised persons, and those with chronic liver disease. This review summarizes current advances in hepatitis E vaccine development, with a focus on safety, immunogenicity, and efficacy, informed by recent clinical trials and post-marker data. The recombinant HEV 239 vaccine (Hecolin®) has been licensed in China since 2012. This HE vaccine was derived from the genotype 1 (GT 1) sequence, which demonstrated 100.0% (95% CI 72.1–100.0) efficacy against hepatitis E infection in a background of 93% GT 4 and 7% GT 1 during the 12-month clinical trials after the third dose, and maintained durable protection for up to 10 years (>83%). Safety data from both clinical trials and real-world use reveal a favorable profile, with adverse events generally mild and transient. Nevertheless, important issues remain, including limited global access and unanswered questions regarding cross-genotype protection, particularly against HEV GT 3. Although both in vitro cross-protection studies and small-animal infectious models have shown prevention of disease, protection against infection might not occur. Currently, ongoing prospective clinical studies mainly evaluate vaccine immunity and safety in pregnant women, immunocompromised individuals and young children. Post-market studies on accelerated vaccination schedules for travelers and relevant clinical trials for patients with pre-existing liver disease have been documented. Other novel vaccine candidates, including virus-like particle, are at various stages of preclinical and clinical development. Despite compelling evidence supporting its effectiveness, the hepatitis E vaccine is not widely incorporated into national immunization programs. In conclusion, the hepatitis E vaccine demonstrates strong safety and efficacy profiles, but wider global implementation and comprehensive evaluation of cross-genotype protection remain essential areas for future study.

Keywords: Hepatitis E, Vaccine, Immunogenicity, Safety, Efficacy, Target

Biography

Dr. James Wai Kuo Shih is a distinguished biotechnology expert and currently serves as Senior Advisor at Xiamen Innovax Biotech, China. With extensive experience in vaccine research, development, and commercialization, Dr. Shih has made significant contributions to the advancement of innovative biotechnology solutions. Throughout his career, he has been actively involved in scientific leadership, strategic development, and translational research within the biopharmaceutical industry. His expertise spans vaccine innovation, public health applications, and global healthcare advancement. As a respected researcher and industry leader, Dr. Shih continues to support the development of cutting-edge technologies that address emerging healthcare challenges worldwide.

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Hao Song

Beijing Institute of Infectious Diseases, Beijing Ditan Hospital, Capital Medical University, Beijing, China

Expanded Glycan Recognition Shapes Tissue Tropism and Zoonotic Risk of Clade 2.3.4.4b H5Ny Avian Influenza Viruses

Highly pathogenic avian influenza H5Ny viruses remain a major threat to global public health because of their capacity for cross-species transmission, tissue adaptation, and rapid evolution. The recent emergence of clade 2.3.4.4b H5N1 viruses in dairy cattle raises an urgent question: how do contemporary H5Ny viruses acquire the ability to infect new mammalian hosts and tissues? Here, we investigated the glycan receptor landscape, structural basis, and tissue tropism of representative clade 2.3.4.4b H5Ny viruses, with a focus on cattle-associated H5N1 and human-infecting H5N8 strains. We found that these viruses do not undergo a simple avian-to-human receptor switch. Instead, they expand their glycan recognition repertoire while retaining avian-type receptor binding. Cattle-associated H5N1 hemagglutinin showed strong binding to α2-3-linked sialylated glycans and weak but detectable binding to α2-6-linked receptors. Tissue-binding analyses revealed robust HA binding to bovine mammary tissue and selected human mucosal tissues, including conjunctival and respiratory epithelia, providing a molecular explanation for mammary gland infection in cattle and conjunctival exposure in humans. Human-infecting H5N8 hemagglutinins further displayed enhanced recognition of complex fucosylated glycans, including sialyl Lewis X, with naturally occurring substitutions contributing to broadened receptor usage. Structural analyses demonstrated that receptor expansion is associated with increased plasticity of the HA receptor-binding site, allowing accommodation of distinct glycan conformations. Together, our findings establish a receptor-, structure-, and tissue-based framework for evaluating zoonotic risk and guiding clinical virology surveillance of emerging H5Ny viruses.

Keywords: H5N1; H5N8; hemagglutinin; receptor specificity; tissue tropism; zoonotic risk

Biography

Dr. Hao Song is a PI at Beijing Ditan Hospital, Capital Medical University. His research focuses on viral entry, host adaptation, pathogenic mechanisms, and the discovery of novel intervention targets for important enveloped viruses. By integrating biochemistry, cell biology, virology, immunology, and structural biology, he studies key viral glycoproteins and host immune molecules involved in virus–host interactions. His work has provided important insights into cross-species transmission of influenza viruses, entry mechanisms of chikungunya virus and gammaherpesvirus, and pathogenic or preventive targets of Zika virus and SARS-CoV-2. These findings support the development of antiviral drugs, neutralizing antibodies, vaccines, and risk assessment strategies. He has published more than 60 SCI papers with an H-index of 35. His current work aims to define molecular determinants of zoonotic risk and translate basic virology findings into surveillance, risk assessment, and intervention strategies.

doi.org/10.51219/URForum.2026.Hao-Song

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Seon-Ju Yeo

Department of Tropical Medicine and Parasitology, Department of Biomedical Sciences, Institute of Endemic Diseases, Seoul National University Medical Research Center, College of Medicine, Seoul National University, Seoul 03080, Republic of Korea

Immunological response of using emulsifying elongation factor 1 alpha of Plasmodium falciparum-based vaccines in complete Freund's adjuvant

Most studies on malaria vaccines have focused on increasing immunity against target molecules on the surface of Plasmodium spp. parasites. Although surface antigens vary among all Plasmodium spp., intracellular antigens are highly conserved; thus, intracellular targets need to be investigated further as vaccine candidates. However, there is a scarcity of intracellular vaccine candidates for Plasmodium parasites. In this study, immune responses induced by complete Freund's adjuvant (CFA) emulsified with an elongation factor-1 alpha of P. falciparum (PfEF-1α) were analyzed as a conserved Plasmodium spp. vaccine candidate. In vivo vaccine efficacy, antibody production, and ex vivo T-cell cytokine assays were analyzed to validate the potential of PfEF-1α in a CFA-based formulation in a rodent model. Immunoinformatics was used to predict potential vaccine epitope candidates, and a novel peptide candidate was validated using ex vivo T-cell studies. The survival rate of the rPfEF-1α plus CFA-immunized group increased by 50%, and among the surviving mice, half were not patent, whereas all bovine serum albumin (BSA) plus CFA showed patency. Upon coculturing T cells with dendritic cells (DC), the PfEF-1α-specific ex vivo T-cell assay revealed that $CD4^{+}IFN\text{-}\gamma^{+}$ secretion was the dominant immune response, followed by $CD8^{+}IFN\text{-}\gamma^{+}$ and $CD4^{+}IL\text{-}4^{+}$ subsets. Immunization with rPfEF-1-α plus CFA elicited robust humoral immunity, demonstrating a 16-fold higher antigen-specific IgG endpoint titer than the BSA control group. Elevated IgG1 and IgG2c titers in rPfEF-1α-immunized mice indicated a balanced Th1/Th2 immune response. Furthermore, the PfEF-1α epitope (410-FAIRDMRQTI-419), identified through in silico prediction and validation, induced IFN-γ secretion in an ex vivo C57BL/6 T-cell study. These results demonstrate PfEF-1α's capacity to drive protective T-cell responses and antibody production. Our findings suggest the use of intracellular antigens for the development of malaria vaccine targets.

Biography

Professor Seon-Ju Yeo is a faculty member in the Department of Tropical Medicine and Parasitology and the Department of Biomedical Sciences at the College of Medicine, Seoul National University. Professor Yeo is also affiliated with the Institute of Endemic Diseases and the Seoul National University Medical Research Center in Seoul, Republic of Korea. Through teaching, research, and academic collaboration, Professor Yeo contributes to advancing the fields of tropical medicine, parasitology, biomedical sciences, and infectious disease research, with a strong commitment to improving global health and medical education.

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Yutaka Kishinda

Osaka Kaisei Hospital, Japan

Innate and adaptive immune responses in Hepatitis C virus infections

The host-hepatitis C virus (HCV) interaction determines whether the acute phase of HCV infection will undergo complete resolution or progress to the development of viral persistence and, ultimately, chronic HCV infection. The host cell mechanism that fights against the virus culminates in the production of interferons (IFNs), IFN- stimulated genes, and cytokines as well as the induction of autophagy and apoptosis. Innate immune re- sponses modulate adaptive immune responses. T cells often fail and the virus persists as a result of T-cell exhaustion and the emergence of viral escape mutations. Exhausted T cells are unable to control the virus infection. A reversal of T-cell exhaustion after treatment with direct-acting antivirals (DAAs), characterized by the enhanced proliferation of HCV-specific CD8+T cells, down-regulates programmed cell death-1 (PD-1) expression and transitions cells towards a TCF-1+CD127+ memory-like T-cell phenotype. The early initiation of treatment with DAAs during the acute phase of HCV infection is important because it reduces immune exhaustion and results in stronger HCV-specific T-cell responses after treatment, thereby reducing the risk of possible reinfection. Furthermore, since the successful treatment of HCV by DAAs does not lead to the complete reversal of T-cell exhaustion, HCV reinfections may occur. Therefore, a prophylactic vaccine is needed to avoid re- infections and achieve the global elimination of HCV infections. This review provides an overview of the current understanding of the pathophysiology behind HCV infection where the current research and treatment are pointing towards.

Biography

Dr. Yutaka Kishida is a respected medical professional affiliated with Osaka Kaisei Hospital, Japan. With extensive clinical experience and a strong commitment to patient-centered healthcare, Dr. Kishida has contributed to advancing medical practice through clinical research, education, and interdisciplinary collaboration. His work focuses on improving healthcare outcomes and promoting evidence-based approaches to diagnosis and treatment. Dr. Kishida is recognized for his dedication to medical excellence and his ongoing contributions to the healthcare community.

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Professor Chi-Young Wang

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Recent advances in engineering in vitro-assembled beak and feather disease virus-like particles encapsulated with biomolecules and its application

Beak and feather disease virus (BFDV) is a member of the Circoviridae family and causes psittacine beak and feather diseases in parrots. Abnormal feathers, brittle claws and beaks, and susceptibility to secondary infections are typical symptoms of the BFDV-infected birds. The BFDV virion possesses a single-stranded DNA genome encapsidated within a 17-22 nm non-enveloped icosahedral virions. This study evaluated the loading capacity of BFDV virus-like particles (VLPs) with different biomolecules. The reassembled BFDV (ReBFDV) VLPs successfully encapsidated plasmids, small interfering RNA, the BFDV genome, and fluorophore-coupled transferrin but not the fluorophore-coupled streptavidin. However, streptavidin conjugated with the biotinylated oligomers, which served as the nuclear factor, could be loaded into the reassembled VLPs. Using urea disruption assays, the stability of ReBFDV packing biomolecules was shown to be comparable with that of the native BFDV virions. The presence of fluorophore-coupled proteins and siRNA and the expressed proteins from plasmids inside the cells, as determined by the immunofluorescence assay, indicated the successful delivery of cargoes by the ReBFDV VLPs. Next, fluorescence quenching assays demonstrated direct binding of the antiviral inhibitors BAY41-4109 (BAY) and 3-methylpiperidine (3-MP) to the Cap protein, with BAY showing higher affinity. BFDV VLPs loaded with cargoes were used to evaluate both inhibitors on the Cap protein assembly into virions. In the presence of BAY or 3-MP, abnormal spiral and balloon-like aggregates formed instead of typical VLPs. In addition, both inhibitors interfered with the binding of ssDNA and dsDNA to the Cap protein. Finally, viral loads in BFDV-infected parrots decreased over time following oral administration of both compounds. Viremia was eliminated, likely due to inhibition of progeny virion assembly by these inhibitors.

Biography

Professor Chi-Young Wang is a faculty member in the Department of Veterinary Medicine, College of Veterinary Medicine, National Chung Hsing University, Taichung, Taiwan. Based at the university's main campus on 145 Xingda Road, Taichung 402, Taiwan, Professor Wang is engaged in teaching, research, and academic service in the field of veterinary medicine. Through contributions to veterinary education and research, Professor Wang is committed to advancing scientific knowledge and supporting the development of animal health and veterinary sciences.

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Prasad S Koka

The Biomedical Research Institute of Southern California, Oceanside, United States

Overcoming the intractable HIV latency for virus elimination through sustained autologous immune responses

HIV latency remains an intractable clinical problem due to the exhaustion of innate immune responses arising from failure of sustained fight against the rapidly replicating and mutating virus, compounded by the pathogen latency in the harboring cells and tissues. We rationalized and reported that addressing the molecular interactions between interferon stimulated gene-15 (ISG15) and lymphocyte function-associated antigen-1 (LFA1) are vital for breaking the cycles of intracellular virus latency (10.3389/fcell.2024.1497964). These mechanisms involve the ISG15-LFA1-bound cytotoxic T-lymphocytes (CTLs) and natural killer (NK) cells, delivering sustained innate immune responses and secretion of antiviral interferon (IFN)-g to eliminate the virus in circulation. The exogenous administration of recombinant ISG15 vis-à-vis antiretroviral therapy (ART) in sequential synergy is expected to keep the autologous CTL and NK cells in a rejuvenated state for complete viral clearance. We propose that exogenous ISG15 is a preferable administration to that of allogeneic NK cells that can also suffer from immune exhaustion requiring periodic NK cell infusions into the infected patients. Further, use of cytokines such as interleukin (IL)-15, can trigger undesirable proinflammatory reactions and are associated with limitations of short half-life in vivo, that may be better controlled at an indirect and intermediate downstream effector stage of the cytokine signaling pathways. Hence, we propose a preferable treatment with clinically measured dosage of recombinant ISG15 and maintaining an autologous cellular nature of the antiviral therapy. This process will enable the released and re/exposed virus neutralization by the ART in concomitant action with the cellular immune responses in patients of HIV/AIDS.

Keywords: HIV, latency clearance, interferon-stimulated gene-15, lymphocyte function-associated antigen-1, autologous innate immune responses, ISG15-LFA1 interactions

Biography

Dr. Prasad S. Koka is a distinguished biomedical scientist affiliated with The Biomedical Institute of Southern California, Oceanside, United States. He has extensive experience in biomedical research, regenerative medicine, stem cell biology, and translational healthcare innovations. Throughout his career, Dr. Koka has contributed to advancing scientific understanding through research, publications, and collaborative initiatives aimed at improving human health. His work focuses on bridging laboratory discoveries with clinical applications, fostering innovative approaches to disease prevention, diagnosis, and treatment. Dr. Koka continues to play an active role in promoting scientific excellence and biomedical advancements on a global scale.

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Eli Gilboa[1,2*], Emily Khan[1], Greta Garrido[1,2] and Brett Schrand[1,2]

Department of Microbiology and Immunology and Sylvester Comprehensive Cancer Center, University of Miami, Miller School of Medicine, Miami FL[1], and InnoVeture labs, Beverly, MA[2], USA

A universal vaccine for cancer and infectious diseases

A universal vaccine for cancer and infectious diseases is as counterintuitive as it comes falling squarely in the category of "too-good-to-be-true". Or is it? We have previously described an approach to make tumor cells "visible" to the immune system, and hence susceptible to immune therapy, by "decorating" them with neoantigens. This was accomplished by tumor targeted siRNA inhibition of the peptide transporter TAP which led to presentation of neoantigens and sensitized tumor bearing mice to immune checkpoint blockade with PD-1 antibodies. Vaccination against the induced neoantigens - by targeted delivery of the TAP siRNA to resident dendritic cells using a CpG ODN or Clec9a antibody targeted TAP siRNA– elicited a potent immune response against the induced neoantigen and unprecedented inhibition of tumor growth. Since TAP is a ubiquitous product expressed in all somatic cells, we hypothesized that pathogen infected cells can be also "marked" for vaccination provided TAP downregulation is restricted to the infected cells. Moreover, since TAP downregulation induces the presentation of a common set of neoantigens in every cell that TAP is downregulated, a vaccine formulation against the TAP downregulation induced neoantigens will elicit an immune response against any tumor cell or pathogen infected cell exhibiting reduced TAP expression. In support of this hypothesis, we have shown that human TAP^{low} neoantigen specific CD8+ T cells stimulated with autologous TAP^{low} DC, generated by treatment with CpG-TAP siRNA, – the in vitro equivalent of a vaccine formulation – recognized melanoma and renal cancer cells, as well as HIV, CMV, and EBV infected cells, provided TAP expression was naturally or experimentally downregulated in the tumor and pathogen infected cells. Ergo, a universal vaccine.

Biography

Eli Gilboa is a translational investigator; made numerous contributions in the fields of gene therapy, HIV research, and cancer immunotherapy that helped shape these fields, such as "self-inactivating" retroviral vectors, HIV TAR decoys, mRNA transfected dendritic cell vaccines, and the use aptamer ligands to modulate tumor immunity, demonstrating their exceptional efficiency to target siRNAs, aptamers, and small molecule drugs to immune and tumor cells. His lab is focusing on the development of new concepts in cancer immunity such as promoting immune memory, tumor targeted costimulation, enhancing tumor antigenicity, and a new vaccination concept using a common off-the-shelf formulation that is applicable to both cancer and infectious diseases.

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Prof. Dr. habil. Bernd Blobel, FACMI, FACHI, FHL7, FEFMI, FIAHSI[1,2,3,4]

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Critical metals extraction from secondary sources; Valorization of Critical Elements recovery from post-industrial waste

Health and social care systems around the world undergo a transformation towards personalized, preventive, predictive, participative precision medicine (5PM), considering the individual health status, conditions, genetic and genomic dispositions in personal, social, occupational, environmental and behavioral context. For enabling communication and cooperation between actors from different domains including the subject of care using different methodologies, languages and ontologies based on different education, experiences, etc., we have to advance design and management of the resulting complex and highly dynamic ecosystem from data to knowledge level. The aforementioned transformation is strongly supported by technologies such as micro- and nanotechnologies, advanced computing, artificial intelligence, edge computing, etc. Beside their opportunities, those advanced technologies also bear risks to be managed. Beside the relationships between technology and human actors, the behavior of intelligent and autonomous systems must be considered from a humanistic, moral and ethical perspective. The challenge is the consistent, correct and formalized representation of the transformed health ecosystem from the perspectives of all domains involved including the legal and ethical ones, representing and managing them based on related ontologies. The resulting business view of the real-world ecosystem must be interrelated using the ISO/IEC 21838 Top Level Ontologies standard. Thereafter, the outcome can be transformed into implementable solutions. The different viewpoint are represented using viewpoint-specific ICT ontologies. The necessary model and framework has been developed by the author and meanwhile standardized as ISO 23903 Interoperability and Integration Reference Architecture. The formal representation of any ecosystem and its development process including examples of practical deployment of the approach are presented in detail. This includes correct systems and standards integration and interoperability solutions.

Biography

Dr. Bernd Blobel studied Mathematics, Technical Cybernetics and Electronics, Bio-Cybernetics, Physics, Medicine and Informatics at the University of Magdeburg and other universities in the former GDR. He received his PhD in Physics with a neurophysiological study. Furthermore, he performed the Habilitation (qualification as university professor) in Medicine and Informatics. He was Head of the Institute for Biometrics and Medical Informatics at the University of Magdeburg, and thereafter Head of the Health Telematics Project Group at the Fraunhofer IIS in Erlangen. Thereafter, he acted until his retirement as Head of the German National eHealth Competence Center at the University of Regensburg as well as Head of the globally unique International Interdisciplinary PhD and PostDoc College. He was and is still leadingly involved in many countries health digitalization as well as electronic health record strategy. He published more than 600 papers, published/edited many books and supervised a big number of PhD students from all around the world. He was German Representative to many SDOs such as HL7, ISO, CEN, OMG, IEEE, ASTM, SNOMED, etc., also chairing the national mirror groups. Furthermore, he is still engaged in international higher education. He is Fellow of several international academies and played specific roles in global organizations such as WHO, European Commission, UNESCO, etc.

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Human Immunodeficiency Virus: A Case of Household Transmission

Human immunodeficiency virus (HIV) infection in children is usually vertically acquired from the mother, in utero, intrapartum, or via breastfeeding. In this case, we report the probable case of horizontal transmission of HIV between two siblings. Based on the available clinical and laboratory data, perinatal, sexual, and health care-related transmission are unlikely. Although rare, this method of transmission needs to be recognized, especially in the setting of direct contact with an individual with poorly suppressed HIV viral infection.

Keywords: Human immunodeficiency virus; mother to child transmission; household transmission; sibling to sibling transmission.

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Visai Muruganandah MBBS, MPHTM, Deborah J. Mills MBBS, MPHTM, Collen L. Lau MBBS, PhD and Luis Furuya-Kanamori MBBS, PhD

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Challenges to Pre-travel BCG Vaccination Among Australian Children

Bacillus Calmette-Guérin (BCG) vaccination is recommended for Australian children travelling to tuberculosis (TB) endemic regions. However, access to vaccination remains challenging due to limited services, logical constraints and variable public awareness. This study explored barriers and enablers to pre-travel BCG vaccination among Australian children. A mixed-methods crosssectional study was conducted between November 2024 and June 2025 across selected Travel Medical Alliance clinics in Queensland and New South Wales, Australia. Parents or guardians of children aged under five years presenting for pre-travel BCG vaccination were invited to complete an online questionnaire and participate in a semi-structured interview. Quantitative data were analyzed descriptively, while interview transcripts underwent thematic analysis. Thirty participants completed the survey and nine participated in interviews. Most travel was for visiting friends and relatives – most commonly in China and India; and all participants considered BCG vaccination important prior to travel. Despite high vaccine confidence, significant access barriers were identified. Seventy percent of participants reported difficulty accessing BCG vaccination locally, with median wait time of 3-4 weeks and some waits exceeding nine weeks. Qualitative analysis identified five major themes: availability, accessibility, cost, risk-benefit perception, and information gaps. Participants highlighted long public waitlists, limited provider availability, and inconsistent information as common barriers. Enablers included the parallel systems of public and private vaccination options, and guidance by General Practitioners. Structural barriers continue to limit timely and equitable access to pre-travel BCG vaccination in Australia. Improved service accessibility, clearer public health messaging, and expanded vaccination options may improve access for at-risk pediatric travelers.

Keywords: BCG, Tuberculosis, Vaccination, Pediatric, Accessibility, Travel

Biography

Dr Visai Muruganandah is an Australian physician trainee and emerging clinician-researcher with a strong interest in infectious disease, vaccinology and public health. A graduate of James Cook University and recipient of the University Medal, he undertook formal research training during his medical education, contributing to vaccine development research. His work has since expanded to include the social and behavioral dimensions of vaccination, with a particular interest in vaccine accessibility, uptake, and public health implementation. Dr Muruganandah's broader interests include travel medicine, preventative health, and translating research into practical, patient-centered healthcare initiatives.

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Tom Polovin, Natalya Bilenko, Dvora Frankenthal, Michal Bromberg, Lital Keinan-Boker and Nadav Davidovitch

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The association between Post-COVID syndrome and self-stigma among the adult Israeli population during the COVID-19 pandemic

Background

In the wake of the SARS-CoV-2 pandemic, a novel condition, termed Post-COVID Syndrome (PCS) has emerged, impacting a significant portion of the global population. Concurrently, the global impact of the virus has extended beyond physical health, leading to the emergence of COVID-19 related stigma. This study investigates the link between PCS and self-stigma, shedding light on this underexplored phenomenon.

Objective

To examine whether exposure to PCS is associated with higher levels of COVID-19–related self-stigma and to identify potential risk factors.

Methods

A retrospective observational cohort study among adult Israeli citizens who tested positive for COVID-19 in a polymerase chain reaction (PCR) test at least twelve weeks before the interview, serving as a pivotal criterion for diagnosing PCS based on self-reported symptoms. The study sample was drawn from the Israeli Ministry of Health's comprehensive COVID-19 database and data were obtained via a computerized telephone questionnaire conducted from June through December 2021. The quantification of self-stigma entailed the utilization of the COVID-19 selfstigma scale. The study examined the adjusted association between exposure to PCS and self-stigma, controlling for socio-economic characteristics.

Results

Seven hundred fifty-nine participants (48.7% male) responded, with a mean age of 47.2 years (SD = 14.9). A quarter (25.2%) of the study population met the criteria for PCS, and 28.1% met the criteria for self-stigma. A significant association was found between PCS and self-stigma, with individuals experiencing PCS reporting higher self-stigma ($p < 0.001$). Multivariable linear and logistic regression analyses confirmed that PCS was significantly associated with self-stigma modeled as both a continuous and a dichotomous outcome ($R2 = 0.09$, $p < 0.001$; $OR = 2.5$, $p < 0.001$, respectively).

Conclusion

This study underscores a significant association between PCS and self-stigma, independently of sociodemographic factors. Given this association, it is imperative to develop comprehensive strategies aimed at stigma reduction among PCS patients. These findings have importance beyond COVID-19, providing lessons for future pandemics and emergencies.

Keywords: Post-COVID syndrome, Long COVID, Self-stigma, Internalized stigma, Ethnic disparities, Health inequities, Psychosocial outcomes

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