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VIRTUAL EVENT

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

SEPTEMBER 26, 2025

ADV. IMMUNOLOGY 2025 & FUTURE VIROLOGY 2025

SCIENTIFIC PROGRAM FRIDAY

SEPTEMBER 26, 2025

08:00-08:10	**Welcome Note**

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

Distinguished Speaker Talks

08:10-08:30	Title: Role of Chitinase 3-Like 1 as a Major Influencer of Chronic Colitis and Colitis-Associated Cancer **Emiko Mizoguchi,** *Kurume University School of Medicine, Japan & Brown University Alpert Medical School, USA*
08:30-08:50	Title: Constructing the Research Framework and Foundational Role of the Platelet-Immune Cell Regulatory Theory **Shuai Tan,** *Xuanwu Hospital, Capital Medical University, China*
08:50-09:10	Title: Interleukin-17 (IL-17) Triggers Systemic Inflammation, Peripheral Vascular Dysfunction and Related Prothrombotic State in a Mouse Model of Alzheimer's Disease **Anella Saviano,** *University of Naples Federico II, Italy*
09:10-09:30	Title: Accelerated Cognitive Aging in Chronically Infected HIV- 1 Positive Individuals Despite Effective Long-Term Antiretroviral Therapy **Alangudi Natarajan Palaniappan,** *ICMR-National Institute for Research in Tuberculosis, India*
09:30-09:50	Title: The Role of Hearing Aids and Cochlear Implants in Post-Viral Hearing Loss: A Speech Perception Analysis **Sunder Bukya,** *Mahindra University, India*
09:50-10:10	Title: Actual Situation on Low-Dose Computed Tomography Screening for Pulmonary Infection and Other Thoracic Diseases at Health Checkups **Ikuma Kasuga,** *Shinjuku Oiwake Clinic and Ladies Branch, Japan & Tokyo Medical University, Japan*

REFRESHMENT BREAK 10:10-10:30	
10:30-10:50	Title: Toxicological Evaluation of Asparagus Racemosus – Based Low-Alcohol Nutraceutical Beverage: Acute and Subacute Safety Assessment in Mice **Divya Choudhary,** *Indian Institute of Technology Delhi, India*
10:50-11:10	Title: Efficacy and Safety Profile of Adalimumab in Patients with Moderate to Severe Plaque Psoriasis **Jeebanjyoti Mishra,** *Kalinga Institute of Medical Sciences, India*
11:10-11:30	Title: Purple Seed Stain: Symptomatology, Epidemiology, and Management **Ritesh Kumar,** *Centurion University of Technology and Management, India*
11:30-11:50	Title: Qualitative Phenomenological Exploration of Perspective of Medical Students Regarding Integrated Modular System **Amna Ikhlaq,** *Aziz Fatimah Medical and Dental College, Pakistan*
11:50-12:10	Title: Antioxidant and Antimicrobial Activities of Dandelion Root Extract (*Taraxacum officinale*) and its Cytotoxic Effect on MDA-MB-231 Breast Cancer Cells **Ismaila Ceesay,** *Cyprus International University, Turkey*
LUNCH BREAK 12:10-12:40	
12:40-13:00	Title: Effect of *m*-trifluoromethyl- Attachment on the Glutathione Peroxidase Mimicry and Antioxidant Actions of diphenyl diselenide: Essential Thiols of Electrogenic Sodium Pump as a Mechanistic Component **Ebenezer Morayo Ale,** *Federal University Wukari, Taraba State, Nigeria*
13:00-13:20	Title: Infection of Neonates with *Staphylococcus aureus* and Methicillin-Resistant *Staphylococcus aureus* at Dormaa Presbyterian Hospital, Ghana **Jerome Adinkrah Obeng,** *Kwame Nkrumah University of Science and Technology, Ghana*
13:20-13:40	Title: The Role of Tarassud Plus Application in Serving the Government and Society During COVID-18 Pandemic **Kawther Al Abri & Laila Alsibani,** *Sultan Qaboos University, Oman*
13:40-14:00	Title: Neutrophil to Lymphocyte Ratio: Association with Microcirculatory Changes Detected by Nail Fold Capillaroscopy in Scleroderma Patients and its Relation to Disease Severity **Rahma Elziaty,** *Ain Shams University, Egypt*

14:00-14:20	Title: A Novel Technique for Enhancing the Take of Pelnac® Dermal Substitute in Deep Dermal Burns of the Upper Limb: A Randomized Controlled Trial **Heidi Ashraf Rady,** *Cairo University Hospitals, Egypt*
14:20-14:40	Title: A novel synthesis of a chlorophyll *b*-gold nanoconjugate used for enhancing photodynamic therapy: *In vitro* study **Shaimaa M. I. Alexeree,** *Cairo University, Egypt*
14:40-15:00	Title: Transmission Dynamics of a Stochastic Model of Chikungunya Virus **Milad Fahimi,** *Semnan University, Iran*
15:00-15:20	Title: An Unusual Cause of Cerebellitis in an Immunosuppressed Elderly Man: Disseminated Scedosporium Boydii Following Gardening Related Injury **Yomon Jasim,** *University Hospitals Dorset NHS Foundation Trust, UK*
REFRESHMENT BREAK 15:20-15:40	
15:40-16:00	Title: Molecular Imaging of Tumor Infiltrating Lymphocytes in Living Animals using a Novel Tracer **Arutselvan Natarajan,** *Stanford University, USA*
16:00-16:20	Title: What Water Conceals: Pandemic Risks No One is Watching **Jhan Sebastián Saavedra Torress,** *Universidad del Cauca, Colombia*
16:20-16:40	Title: Development, Scale-Up, and Clinical Bioavailability High Drug Loaded Redispersible Amorphous Nanoparticle Formulations of BCS IV Compound **Mengqi Yu,** *AbbVie Inc, USA*
16:40-17:00	Title: Immune Genomics in Treatment Resistant Bipolar Depression **Angelos Halaris,** *Loyola University Medical Center, Loyola University Stritch School of Medicine, USA*
17:00-17:20	Title: Immunogenicity of Adalimumab Reference Product and Adalimumab-Adbm in Patients with Rheumatoid Arthritis, Crohn's Disease and Chronic Plaque Psoriasis: A Pooled Analysis of the VOLTAIRE Trials **Vibeke Strand,** *Stanford University School of Medicine, USA*
17:20-17:40	Title: Targeting Stem Cell-Myeloid Cell Crosstalk to Overcome Cancer Relapse from Immunotherapy **Yuxuan Miao,** *The University of Chicago, USA*

17:40-18:00	Title: Mast Cells as Targets for Therapeutic Strategies
	Alicia B. Penissi, *Universidad Nacional de Cuyo, Argentina*

PANEL DISSCUSION

BOOKMARK YOUR DATES

4th EURO-GLOBAL SUMMIT ON

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY

&

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VIROLOGY CONGRESS

SEPTEMBER 2026 | SPAIN

ADV. IMMUNOLOGY 2025
FUTURE VIROLOGY 2025

DAY 01

VIRTUAL EVENT

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

SEPTEMBER 26, 2025

SPEAKER TALKS

Role of Chitinase 3-Like 1 as a Major Influencer of Chronic Colitis and Colitis-Associated Cancer

Emiko Mizoguchi[1,2]

[1]Department of Immunology, Kurume University School of Medicine, Japan
[2]Department of Molecular Microbiology and Immunology, Brown University Alpert Medical School, USA

Chitinase 3-like 1 (also known as CHI3L1 or YKL-40) is a mammalian chitinase that has no enzymatic activity, but has the ability to bind to chitin, the polymer of N-acetylglucosamine (GlcNAc). Chitin is a component of fungi, crustaceans, arthropods including insects and mites, and parasites, but is completely absent from mammals such as humans and mice. In general, chitin-containing organisms produce CHI3L1 to protect the body from exogenous pathogen as well as hostile environments, and it was thought that it has a similar effect of tissue restitution and protection in mammals. However, recent studies have revealed that CHI3L1 plays a pro-inflammatory role by inducing anti-apoptotic activity in epithelial cells and macrophages.

Under chronic inflammatory conditions in the colon, our group confirmed that the expression of CHI3L1 is significantly induced on the apical side of colonic epithelial cells, and activates many downstream pathways involved in inflammation and the following carcinogenic changes of colonic epithelial cells. I would like to discuss the potential roles of CHI3L1 in chronic colitis as well as colitis-associated cancer in this session.

Biography

Emiko Mizoguchi have a broad background in immunology, pathology, and epithelial biology in inflammatory disorders, in particular inflammatory bowel disease (IBD). As PI on a couple of NIH-funded grants, she has established a deep knowledge in receptor/ligand-mediated innate and acquired immune responses during the development of inflammatory disorders. Furthermore, she successfully established a collaborative network, not only within the Harvard community but also other areas of US as well as other countries, and have produced several peer-reviewed publications from each project. The current application is designated to dissect

the mechanism involved in the development of Immunomodulatory effects of mammalian chitinases on mucosal immunity, which is very important as one of promising therapeutic strategies for IBD. In summary, she has demonstrated a strong record of publication and productive research projects in the areas of mucosal immunology, epithelial biology and immunopathology, and she have enough expertise and experience to support this proposed project as a Principal Investigator.

Constructing the Research Framework and Foundational Role of the Platelet-Immune Cell Regulatory Theory

Shuai Tan[1], Huizhen He[1], Yuxin Li[1], Mingyue Shang[1], Yaofang Cao[1], Dongmei Zou[1], Ronghua Hu[1], Wuhan Hui[1], Xiaoli Chang[1], Jing Ni[1], Qiang Ma[1], Li Su[1], Jing Sun[1], Wanxue He[2], Yumeng Li[1], Yaochi Chen[1], Xingmin Feng[3] and **Wanling Sun[1]**

[1]Department of Hematology, Xuanwu Hospital, Capital Medical University, China
[2]Department of Pulmonary and Critical Care Medicine, Xuanwu Hospital, Capital Medical University, China
[3]Hematology Branch, National Heart, Lung, and Blood Institute, National Institutes of Health, USA

Platelets are key factors in hemostasis and thrombosis, and are fully involved in immune response processes such as atherosclerosis. Immune cells such as T cells and macrophages are drivers of immune responses. An increasing number of studies have shown that cross-talk between platelets and immune cells is likely one of the critical bridges in inflammatory responses and immune responses. Among these, platelets release mediators such as PF4, TGF-β, and RANTES, which bind to T cell membrane receptors, activate downstream mitochondrial energy metabolism signaling pathways, affect nuclear transcription, and thereby regulate the differentiation and proliferation of immune cells—this is currently one of the strong hypotheses for platelet regulation of immune cells. AA is a bone marrow failure syndrome characterized by pancytopenia and decreased HSPCs in the bone marrow, having a strong immune background color, it can be either congenital or acquired, predominantly affecting adolescents and the elderly, with higher incidence in Asia compared to Europe and America. Current treatment options include allogeneic hematopoietic stem cell transplantation or immunosuppressive agents, yet proximately a third of patients fail to reach long-term survival. AA is primarily driven by immune-mediated destruction of HSPCs, initiated by selfactivated T cells. Early stages feature a Th1 response, which later shifts to Th17 and effector memory CD8+ T cells. Key cytokines including IFN-γ and TNF-α play crucial

roles in this immune dysregulation, influencing HSPCs and contributing to bone marrow failure. Furthermore, BMF, particularly M1 subtype, are implicated in AA *via* the TNF-α/TNF-α receptor pathway, leading to T cell activating and subsequent HSPC damage. Some studies suggest that platelet may modulate T cell responses through mechanisms such as Akt-PGC1a-TFAM pathway or PF4-mediated activity, which could play a role in AA. However, direct evidence connecting platelet regulation to T cell-mediated HSPC damage is limited, and current research has largely focuses on CD8+ T cells. Moving forward, it is essential to investigate the interactions between platelets, CD4+ T cells, and mitochondrial energy metabolism. We propose that platelet-derived factors such as PF4 and TGF β may activate mitochondrial pathways, influencing T cell activation and leading to HSPC destruction in AA. This hypothesis could provide new insights into the molecular mechanisms and pave the way for novel therapeutic strategies.

Biography

Shuai Tan | MD, PhD, Physician-Scientist, Xuanwu Hospital Wisdom Convergence Project Supported Scholars

Department of Hematology, Xuanwu Hospital, Capital Medical University, Beijing, China

Obtained the doctoral degree from Karolinska Institutet. Member of SITC; Young Editorial Board Member of Brain Network Disorders (Selected by Excellence Action Plan for China STM Journals); JoVE Hematology Collection Guest Editor; Reviewer for JITC (IF: 10.6, JCRQ1), Front. Med., Front. Pharmacol, Curr. Med. Chem.

He is the member of Dr. Wanling Sun's Clinical and Research team (Dr. Wanling Sun, PI and Director of the Hematology Department at Xuanwu Hospital), primarily focusing on research related to hematology immunology.Focus on hematological disease diagnosis/treatment, platelet mitochondrial energy metabolism immune crosstalk function, immune cells, and clinical/mechanistic research in atherosclerosis. The researches have received support from multiple funding sources, including national-level and provincial/ministerial-level grants. He elucidated novel mechanism where platelet-released PF4 modulates T-cell immune response crosstalk, providing a potential intervention target for developing next-gen platelet therapeutics and improving hematopoietic diseases. First proposed the "Aplastic Anemia-T Cell-Platelet" interaction theory. The team's research objective is to elucidate the role of platelet regulation of immune cell function and energy metabolism in the pathogenesis of hematological diseases, thereby developing next-generation platelet-based immunotherapeutic agents, which will help improve patient prognosis, enhance quality of life, alleviate economic burden, and generate social and economic benefits.

Interleukin-17 (IL-17) Triggers Systemic Inflammation, Peripheral Vascular Dysfunction and Related Prothrombotic State in a Mouse Model of Alzheimer's Disease

Anella Saviano[1], Valentina Vellecco[2], Anna Schettino[1], Noemi Marigliano[1], Federica Raucci[1], Gian Marco Casillo[1], Giuseppe Cirino[2], Asif Jilani Iqbal[3], Mariarosaria Bucci[2] and **Francesco Maione[1]**

[1]ImmunoPharmaLab, Department of Pharmacy, School of Medicine and Surgery, University of Naples Federico II, Italy
[2]Department of Pharmacy, School of Medicine and Surgery, University of Naples Federico II, Italy
[3]Institute of Cardiovascular Sciences (ICVS), College of Medical and Dental Sciences, University of Birmingham, UK

Alzheimer's disease (AD) is one of the most prevalent forms of neurodegenerative disorders. Previously, we have shown that *in vivo* administration of an IL-17 neutralizing antibody (IL-17Ab) rescues amyloid-β-induced neuro-inflammation and memory impairment, demonstrating the pivotal role of IL-17 in AD-derived cognitive deficit. Recently, AD has been recognized as a more intriguing pathology affecting vascular networks and platelet function. However, not much is known about peripheral vascular inflammation and how pro-inflammatory circulating cells/mediators could affect peripheral vessels' function. This study aimed to evaluate whether IL-17Ab treatment could also impact peripheral AD features, such as systemic inflammation, peripheral vascular dysfunction, and related pro-thrombotic state in a non-genetic mouse model of AD. Mice were injected intracerebroventricularly with Aβ1-42 peptide (3 µg/3 µl). To evaluate the systemic/peripheral protective profile of IL-17Ab, we used an intranasal administration of IL-17Ab (1 µg/10 µl) at 5, 12, and 19 days after Aβ1-42 injection. Circulating Th17/Treg cells and related cyto-chemokines, haematological parameters, vascular/endothelial reactivity, platelets and coagulation function in mice were evaluated. IL-17Ab treatment ameliorates the systemic/peripheral inflammation, immunological perturbance, vascular/endothelial impairment and pro-thrombotic state, suggesting a key role for this cytokine in fostering inflammatory processes that characterize the multifaced aspects of AD.

Biography

Dr. Anella Saviano conducts her research at the ISO9001-certified *ImmunoPharmaLab*, part of the Department of Pharmacy at the University of Naples Federico II. Her work focuses on: (i) the role of natural compounds and nutraceuticals/novel foods in the regulation and modulation of the inflammatory response, and (ii) the role of interleukin-17A/F (IL-17A/F) in the pathogenesis of autoimmune inflammatory diseases such as rheumatoid arthritis, immune-mediated colitis, and psoriasis. Dr. Saviano's research is further supported by her active involvement in several authorized clinical studies in both Italy and the UK.

Accelerated Cognitive Aging in Chronically Infected HIV-1 Positive Individuals Despite Effective Long-Term Antiretroviral Therapy

Alangudi Natarajan Palaniappan[1], Hemalatha Babu[1], Gladys Rachel[1,4], Ujjwal Neogi[2], Aswathy Narayanan[2], Chinnaiyan Ponnuraja[1], Vijila Sundaraj[3], Vinod Kumar Viswanathan[3], C. P. Girish Kumar[4], Srikanth P. Tripathy[1] and **Luke Elizabeth Hanna[1]**

[1]Department of Virology and Biotechnology, ICMR-National Institute for Research in Tuberculosis, India
[2]Division of Clinical Microbiology, Department of Laboratory Medicine, Karolinska Institutet, Sweden
[3]Government Hospital of Thoracic Medicine, Tambaram Sanatorium, India
[4]Laboratory Sciences, ICMR-National Institute of Epidemiology, India

Objectives / Scope: People living with HIV (PLHIV) are known to be at a higher risk of developing an array of aging-related diseases despite well-adhered combined antiretroviral therapy (cART). The present study aimed to investigate the impact of chronic HIV infection on neurocognitive function in virally suppressed PLHIV.

Methods: This cross-sectional study enrolled HIV-positive individuals (PLHIV; n = 32; on uninterrupted cART) randomly from a tertiary care ART Centre in Chennai, South India. HIV-uninfected individuals matched for age and gender served as Healthy Controls (HC). All individuals provided a detailed clinical history and underwent neuropsychological assessment using the International HIV Dementia Scale (IHDS). Plasma proteome analysis was per-formed using the Proximity extension assay (PEA) with the Olink® neuroexploratory panel, and untargeted metabolomics was performed using Ultra-High-Performance Liquid Chromatography/Mass Spectrometry/Mass Spectrometry.

Results: Despite a median duration of 9 years on first-line cART and suppressed viremia, a significant proportion of PLHIV registered significant levels of asymptomatic neurocognitive impairment, with 71% of these individuals scoring ≤ 10 in the IHDS test. We also observed significant alterations in a number of proteins and metabolites that are known to be

associated with neuroinflammation, neurodegeneration, cognitive impairment, and gastrointestinal cancers, in the PLHIV group.

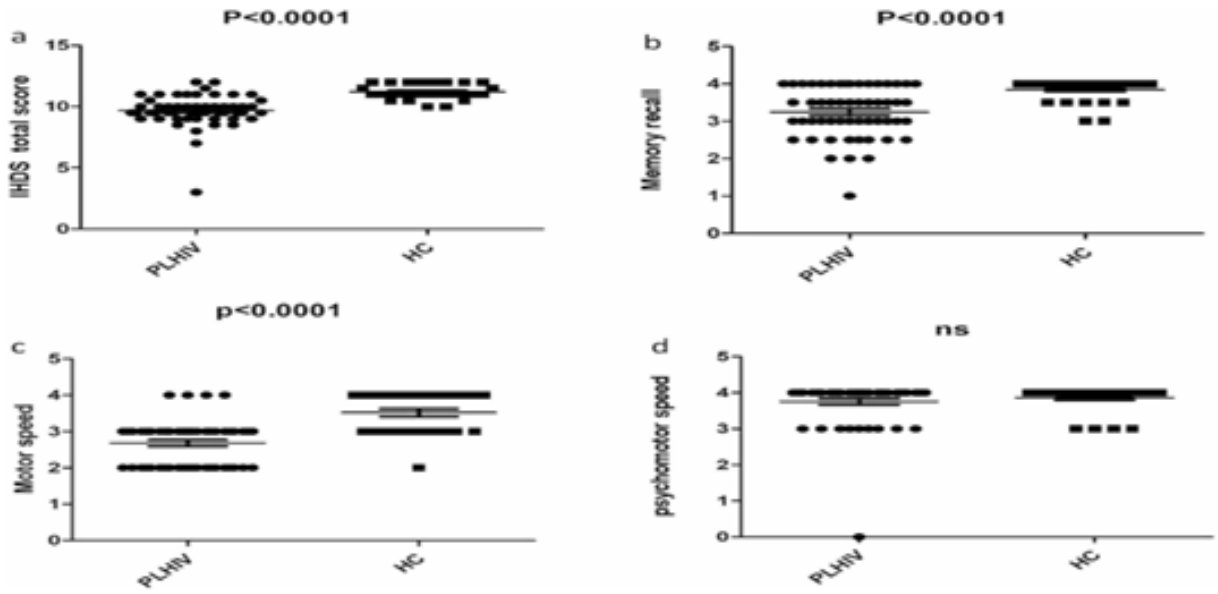


Fig. 1 Assessment of cognitive function in PLHIV and HC groups: a) Total IHDS score, b) memory recall test score c) motor speed test score and d) psychomotor speed test score (Mann-whitney U test)

Protein Biomarker	**PLHIV/HC**	**significance ($p < 0.05$)**	**Pathology associated with neurodegeneration**	**Related article DOI:**
GPNMB	Down-regulated	P = 0.047	Exerts its neuroprotective effect through reduction of astrocyte-mediated neuro inflammation,	(Neal et al. 2018; Ashktorab et al. 2018)
ANXA10	Up-regulated	P = 0.002	Co-localized with neuronal markers, elevated in neuro pathic pain	(Quiskamp et al. 2014; Liu et al. 2018
IL-15	Up-regulated	P = 0.020	Interacts with BBB, high serum concentration in neurodegenerative dis eases, and correlates with ROS level	(Rentzos et al. 2006; Pan et al. 2008; Pagliari et al. 2013; Bahri et al. 2015; Bishnoi et al. 2015; Pangrazzi et al. 2017)

SFRP	Down-regulated	P = 0.014 56	Protective against H2O2 induced oxidative damage, Neuropathic pain	(Suzuki et al. 2002; Tao et al. 2015; Tang et al. 2018) (Linscheid
PTS	Up-regulated	P = 0.003	Increases nitric oxide production Costi gan and mediates neurodegeneration	(Linscheid et al. 1998; Parathath et al. 2006; Costigan et al. 2009)
TPPP3	Down-regulated	P = 0.001	Involved in synaptic organization and neuronal plasticity, controls amyloid β-peptide (Aβ) production	Frykman et al. 2012; Ye et al. 2017; Shi et al. 2019)

Table 3 Summary of altered neurogenic and neuro-inflammatory protein

Conclusion: The study provides clinical as well as laboratory evidence to substantiate the presence of asymptomatic neurocognitive impair¬ment in a large proportion of PLHIV, despite adequate cART and undetectable viremia, thereby supporting the view that HIV infection potentiates the risk for accelerated and accentuated neurological aging. This observation highlights the need to devise and implement appropriate intervention strategies for better long term management of HIV-infected persons.

Biography

Dr. P.L. Natarajan, is working as a Clinician Scientist in the Dept. of Virology & Biotechnology, ICMR-National Institute for Research in Tuberculosis, India. He holds a medical degree (MBBS) and has done Ph.D in Immunology. His research interests include Clinical Immunology of HIV-TB including HIV-induced Inflammaging, Clinical trials involving newer anti-TB drugs / TB vaccines, and Pharmacodynamics of anti-TB drugs. He has 12 years of translational research experience. He has publications in high impact journals with respect to randomized clinical trials in HIV/TB (Gopalan et al. 2018), HIV-Inflammaging (Babu et al. 2019), TB drug toxicity trial (Perumal Kannabiran Bhavani et al. 2024), Accelerated cognitive aging in HIV (Babu et al. 2025) etc.,

The Role of Hearing Aids and Cochlear Implants in Post-Viral Hearing Loss: A Speech Perception Analysis

Sunder Bukya

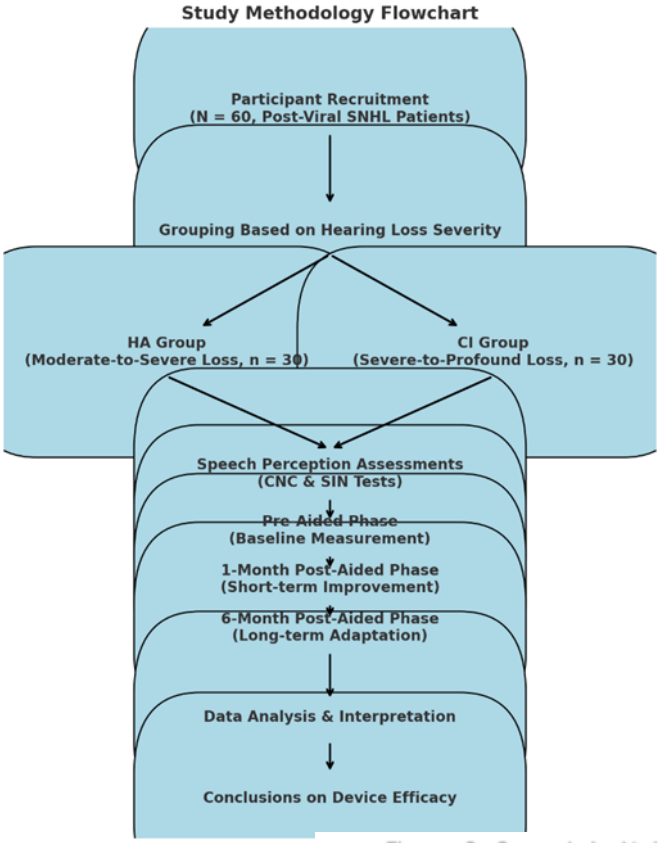
Department of HSS, Mahindra University, India

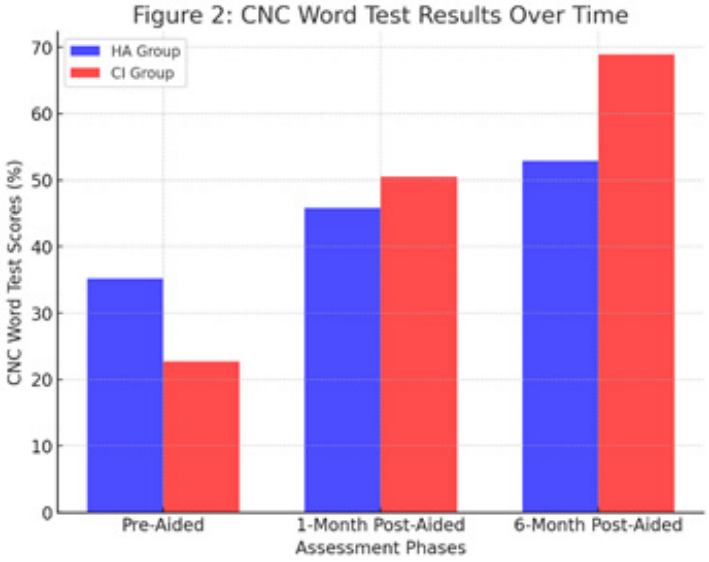
Background: Viral infections, including cytomegalovirus (CMV), measles, mumps, rubella, and COVID-19, have been identified as causes of sensorineural hearing loss (SNHL). Post-viral hearing loss, particularly high-frequency sloping SNHL, significantly affects speech perception. While hearing aids (HAs) and cochlear implants (CIs) serve as primary rehabilitative options, their efficacy in restoring speech perception among post-viral SNHL patients remains underexplored. This study evaluates the impact of amplification devices on speech perception by analyzing pre- and post-aided conditions.

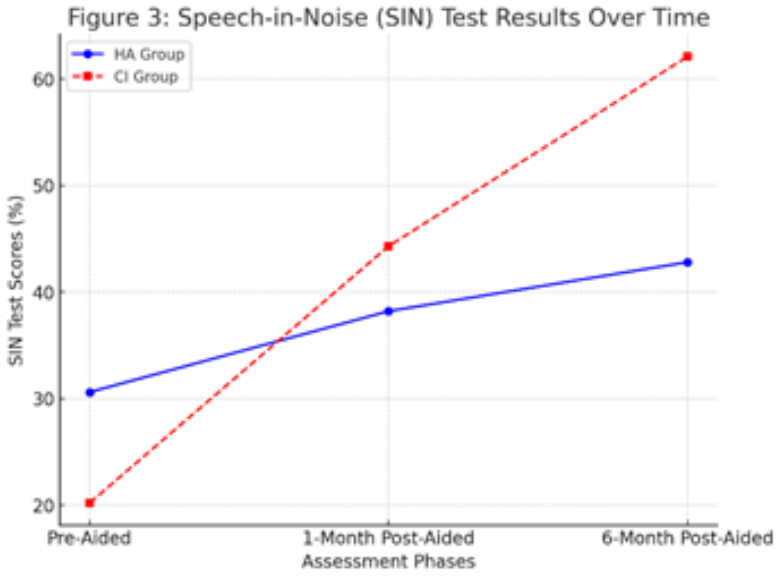
Methodology: A cohort of 60 individuals (ages 18–55) with confirmed post-viral SNHL was recruited. Participants were categorized into two groups: (1) moderate-to-severe loss fitted with hearing aids (HA group) and (2) severe-to-profound loss fitted with cochlear implants (CI group). Speech perception was assessed using the Consonant-Vowel Nucleus-Consonant (CNC) word test and the Speech-in-Noise (SIN) test. Evaluations were conducted in three phases: (1) **Pre-aided phase:** Baseline speech perception scores were recorded; (2) **Short-term post-aided phase:** Speech perception was reassessed after one month of device use; (3) **Long-term post-aided phase:** A final evaluation was conducted after six months.

Results: All participants' speech recognition scores were significantly reduced in the pre-aided phase. One-month post-aid fitting, CNC scores improved by 30% and SIN scores by 25% in the HA group, while the CI group showed a 45% and 40% improvement, respectively. At six months, CNC and SIN scores increased by 50% and 40% in the HA group, while the CI group exhibited superior gains of 70% and 65%.

Conclusion: Both HAs and CIs significantly enhance speech perception in post-viral SNHL, with CIs offering superior long-term benefits. Early intervention and tailored rehabilitation strategies are crucial for optimizing outcomes. Future research should explore neuroplasticity and speech perception recovery to refine device programming.







Biography

Dr. Sunder Bukya is an Assistant Professor in the Department of HSS at Mahindra University, Hyderabad, India. He holds a PhD in Cognitive Sciences from the University of Hyderabad, specializing in Cognitive Sciences, and completed a postdoctoral fellowship in Cognitive Audiology. His research spans Cognitive Sciences, Speech Perception, NLP, and Audiology. He has published extensively in reputed journals and presented at international conferences in Brazil, Greece, Thailand, and Turkey. Dr. Bukya has also received the International Best-Case Study of the Year 2024 Award. His recent projects include AI-driven Indus Valley script decipherment, driving behaviour, and cognitive efficiency studies. His work integrates interdisciplinary approaches.

PEERS ALLEY MEDIA

Virtual Event

ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

September 26, 2025

Actual Situation on Low-Dose Computed Tomography Screening for Pulmonary Infection and Other Thoracic Diseases at Health Checkups

Ikuma Kasuga[1,2,3,4], Yoshimi Yokoe[1], Sanae Gamo[1], Tomoko Sugiyama[1], Maiko Noguchi[1], Michiyo Tokura[1], Mayumi Okayama[1], Nariko Ohmori[1], Wakako Hamanaka[1], Kazuhiro Sugosawa[1], Masaharu Iwai[1], Yoshitsugu Takeda[5], Takeshi Sato[6], Itto Nakashima[4], Kazuyo Wakabayashi[4], Shigeru Yamamoto[7] and **Osamu Ohtsubo[2,8]**

[1]Healthcare Center, Shinjuku Oiwake Clinic and Ladies Branch, Japan
[2]Faculty of Human Care, Tohto University, Japan
[3]Faculty of Medicine, Tokyo Medical University, Japan
[4]Healthcare Corporation, Seikokai, Japan
[5]Healthcare Center, Shinjuku Oiwake Clinic Itabashi Branch, Japan
[6]Healthcare Center, Healthport Clinic, Japan
[7]Medical Four Clover Company Limited, Japan
[8]Kenkoigaku Association, Japan

Background: The usefulness of low-dose computed tomography (LDCT) for early detection of lung cancer has been widely reported. In addition to the early detection of lung cancer, many improved cases and false-positive scans by LDCT screening have also been reported. On the other hand, the actual situation of LDCT screening for pulmonary infection and other thoracic diseases at health checkups remains unclear. Therefore, the aim of this study was to investigate the detailed clinical course of cases detected by LDCT and evaluate the usefulness of LDCT for pulmonary infection and other thoracic diseases during health checkups.

Method: Among 6,402 (4,444 men and 1,958 women) individuals who had received LDCT at health checkups in our facilities over a 12-year period (from April 1, 2012, to March 31, 2024), we investigated the number of cases who have abnormal opacity on LDCT and warrant detailed examination. We also investigated the final outcomes of these patients after a de-

tailed examination at the hospital.

Result: Totally, 206 cases were detected for detailed examination by LDCT and 50 out of 206 cases (24 %) were finally taken medical treatment. Among them, the most commonly encountered lesion was pulmonary infection, and 22 patients were treated with antibiotics. Eleven patients with lung cancer and 4 patients with mediastinal tumors were also detected, which could lead to early surgical treatment. Early signs of chronic obstructive pulmonary disease (COPD) were also found and among them, smoking cessation could be performed in 10 patients. Other pulmonary diseases were occasionally detected using LDCT, including 1 case of lymphangioleiomyomatosis (LAM), 1 case of idiopathic pulmonary fibrosis (IPF), and 1 case of pulmonary sequestration. In contrast, 156 other cases (76 %) were determined to continue follow-up or improve spontaneously by immunological response at the time of the outpatient clinic.

Conclusion: LDCT found various thoracic diseases including pulmonary infection, lung cancer, mediastinal tumors and COPD which could lead to early treatment. However, we also found that more than three-quarters of untreated cases were present after a detailed examination.

Biography

Dr. Ikuma Kasuga is a chief director of Healthcare Center, Shinjuku Oiwake Clinic and Ladies Branch, Seikokai Group, Shinjuku, Shinjuku-ku, Tokyo, Japan. He is also a guest professor at Department of Medical Education, Faculty of Medicine, Tokyo Medical University and Department of Nursing, Faculty of Human Care, Tohto University. After he got Ph.D. in April, 1997 in First Department of Internal Medicine, Tokyo Medical University, he engaged in a visiting scientist at iCAPTURE Centre, St Paul's Hospital, University of British Columbia, Vancouver, BC, Canada for 2 years. The major research focus is the clinical, pathological, genetic and epidemiological approach to pulmonary disease especially lung cancer, mediastinal tumors and pulmonary infection.

Toxicological Evaluation of *Asparagus Racemosus* – Based Low-Alcohol Nutraceutical Beverage: Acute and Subacute Safety Assessment in Mice

Divya Choudhary[1], S. N. Naik[1], Vidushi Tyagi[2], Anirban Pal[2] and **P. Hariprasad[1]**

[1]Indian Institute of Technology Delhi, India
[2]Cntral Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), India

This study aimed to develop and evaluate the safety of a Shatavari-based Low Alcohol NutraBeverage (SLANB) formulated through controlled fermentation of *Asparagus racemosus* (Shatavari), a medicinal herb known for its antioxidant, anti-inflammatory, and adaptogenic properties. The objective was to enhance the bioavailability and functional efficacy of Shatavari through fermentation, while ensuring the beverage's safety for human consumption.

The scope of the work involved both formulation and comprehensive toxicological evaluation of SLANB, positioning it as a potential functional food and nutraceutical product. Fermentation was carried out for 28 days, and advanced analytical techniques were employed for metabolite characterization. LC-MS analysis identified ten key bioactive compounds, while GC-MS profiling revealed important volatile constituents, including ethanol and aroma compounds.

To assess safety, acute and subacute toxicity studies were conducted using Swiss albino mice. In the acute study, a single oral dose of 1.5 mL per 100 g body weight was administered, and animals were monitored over 7 days. No signs of toxicity or mortality were observed. In the 28-day subacute study, mice were divided into groups and administered SLANB at three different dose levels. Physiological parameters such as body weight, food and water intake, organ weight, and behavior were recorded. Across all groups, no adverse effects or abnormalities were detected.

Results confirmed the absence of any toxicological effects in both acute and subacute evaluations, indicating that SLANB is safe and well-tolerated.

Conclusion: The findings support SLANB as a safe, plant-based fermented beverage with promising applications in the nutraceutical and functional food industries. This research provides a scientific basis for the development of fermented herbal beverages with enhanced therapeutic potential and consumer safety.

Biography

Divya is a dedicated food technologist with a PhD from IIT Delhi, specializing in fermentation technology, functional beverages, and nutraceuticals. Her research focuses on the valorization of medicinal plants, particularly *Asparagus racemosus* (Shatavari), to develop low- alcohol Nutra-beverages with enhanced health benefits. Have a 1 patent and 5 SCI publications. With strong expertise in metabolomics, ANN-GA modeling, and advanced analytical tools such as LC-MS, GC-MS, and HPLC, she has successfully optimized fermentation processes to improve bioactive compound bioavailability. Divya's work integrates traditional knowledge with modern science, emphasizing sustainable, plant-based innovations for gut health and wellness. She has collaborated with premier institutions such as CIMAP, IITD, and NRF (DU), and has received recognition for her patented beverage formulation. Committed to food safety, biopreservation, and functional food development, Divya aims to bridge the gap between research and real-world application. Her goal is to create science- driven, health-promoting food products that support preventive healthcare and consumer well- being.

Efficacy and Safety Profile of Adalimumab in Patients with Moderate to Severe Plaque Psoriasis

Jeebanjyoti Mishra

Kalinga Institute of Medical Sciences, India

Introduction: Psoriasis is a common, chronic, inflammatory skin disease with significant impact on the quality of life. Adalimumab is a recombinant, human, IgG1 monoclonal antibody specific for TNF-α approved for moderate to severe psoriasis.

Study objectives: To evaluate safety and efficacy profile of Adalimumab in patients with moderate to severe plaque psoriasis.

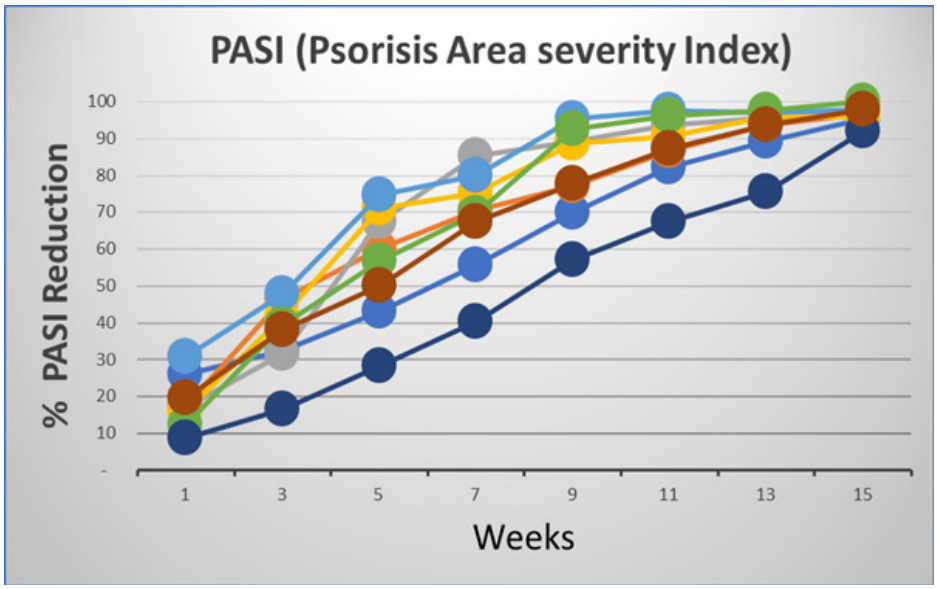
Methodology: Adalimumab administered at initial dose of 80 mg, followed by 40 mg given every other week, staring at one week after first dose, till 15 weeks.

Outcome: Incidence of adverse events, Percentage of patients achieving PASI 50/75/90/100 response from baseline to week 16, Mean percentage PASI score improvement from baseline, Percentage of patient achieving PGA score clear/minimal from baseline to week 16

Inclusion criteria: Patients of 18 to 65 years of age. Moderate to severe plaque psoriasis with ≥10% BSA involvement and PASI ≥12. PGA score of at least moderate disease severity.

Results: 9 patients completed the treatment, and the Mean time to reach PGA was 1/0: 11 Weeks. None of them were having any serious adverse effects. The mean duration to reach PASI 50 and PASI 75 were 4.5 weeks, and 12 weeks, respectively.

Adverse event during therapy:	
Redness of eyes	2
Toothache	1
Joint pain	1
Bilateral pedal edema	1
Serious adverse events	Nil



Conclusion: Adalimumab seems to be a promising therapeutic approach with excellent efficacy and well tolerated with minimal adverse effects. However, we need cautious pre-testing to rule out infections.

Biography

Dr. Jeebanjyoti Mishra, MD (Skin Venereology and Leprosy), is a dedicated researcher with a special interest in Autoimmune disorders, Clinical Dermatology and immunology. With approximately 10 national and international publications to his name, he is committed to advancing research and fostering better practices in public health and Clinical Dermatology.

Purple Seed Stain: Symptomatology, Epidemiology, and Management

Ritesh Kumar[1], Anshu Kumar[2], Krishnendu Kundu[2], Sabyasachi Mukhopadhyay[2] and **Arjun Kumar Agarwal[2]**

[1]Centurion University of Technology and Management, India
[2]Bidhan Chandra Krishi Viswavidyalaya, India

Soybean is an economically significant crop, renowned for its high nutritional value. However, purple seed stain is a widespread disease that poses a major threat to global soybean production. Characterized by the appearance of dark purple to black discolorations on seeds, this disease leads to notable declines in both yield and seed quality. This chapter delves into the epidemiology of soybean purple seed stain, examining the mechanisms of its spread within and across soybean fields. Understanding the key factors that drive its transmission is essential for devising effective disease control measures. The disease's severity is influenced by multiple elements, including environmental conditions, farming practices, and seed-borne transmission. Gaining insights into the disease's development, early detection, and appropriate control methods is vital for minimizing its impact. The chapter discusses various management approaches such as cultural techniques, biological agents, resistant cultivars, and chemical treatments. Overall, it offers a thorough overview of the disease's symptoms, spread, and identification, while also touching upon both traditional and contemporary management strategies.

Biography

Ritesh Kumar has completed his B.Sc. (Ag.) from Sardar Krushinagar Dantiwada Agricultural University, Gujarat, India. He did M.Sc. (Ag.) in Plant Pathology from Bihar Agricultural University, Bihar, India and Ph.D. (Ag.) in Plant Pathology from Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India. He has qualified NET examination several times, ICAR NTS, JRF and SRF. He got Best M.Sc. and Best Ph.D. Thesis awards by several agencies of national and international repute. Currently he is serving as an Assistant Professor in Department of Plant Pathology, M S Swaminathan School of Agriculture, Centurion University of Technology and Management, Odisha, India. He is also the Dean- Student's Affairs of the campus. He is having an experience of 7 years in the field of Research and Teaching. He has published more than 35 publications with h Index of 6. His area of expertise is Plant Pathology, Plant Bacteriology, Mycology, Biocontrol, PGPR and Endophytic Fungi.

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ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

September 26, 2025

Qualitative Phenomenological Exploration of Perspective of Medical Students Regarding Integrated Modular System

Amna Ikhlaq[2], Maryam Tariq[1], Amna Ikram[1], Maleeha Farooq[1], Zainab Sabir[1], Ayesha Ashfaq[1] and **Humayun Suqrat Hasan Imam[2]**

[1]Aziz Fatimah Medical and Dental College, Pakistan
[2]Department of Community Medicine, Aziz Fatimah Medical and Dental College, Pakistan

Introduction: Recently, the integrated modular system (IMS) of medical education has been implemented in Pakistan. Being a newly introduced system, issues can arise during the adaptation phase which can be resolved by taking the views of students about the Integrated Modular System on board. Thus, effectiveness and underlying challenges can be unveiled.

Objective: This study aims to investigate the perspectives of medical students of Aziz Fatimah Medical and Dental College regarding benefits and challenges of IMS.

Methodology: After ethical approval, this qualitative study was conducted in Aziz Fatimah Medical and Dental College, during June 2024 to August 2024. Non-probability purposive sampling was used and data was collected through semistructured interviews *via* Zoom until saturation was reached. A total of 20 students were interviewed *via* Zoom after getting a written consent. After recording and transcription, a reflexive thematic analysis was carried out *via* NVIVO software to make themes and codes, which were re-evaluated afterward to finalize the results. The study was done as per Consolidated Criteria for Reporting Qualitative research (COREQ).

Results: Two themes, *i.e.*, benefits and challenges were derived from the data. Students appreciated that the modular system provides holistic learning and integration, clinical preparedness, exam efficiency and adaptability, global medical education compatibility, enhanced learning strategies, and a less stressful and more engaging curriculum. However, time constraints and syllabus challenges, struggle with minor subjects, deficient clinical

engagement, transition issues with the new system, and high stress and intensive efforts were problematic for the students.

Fig. Primary codes of benefits

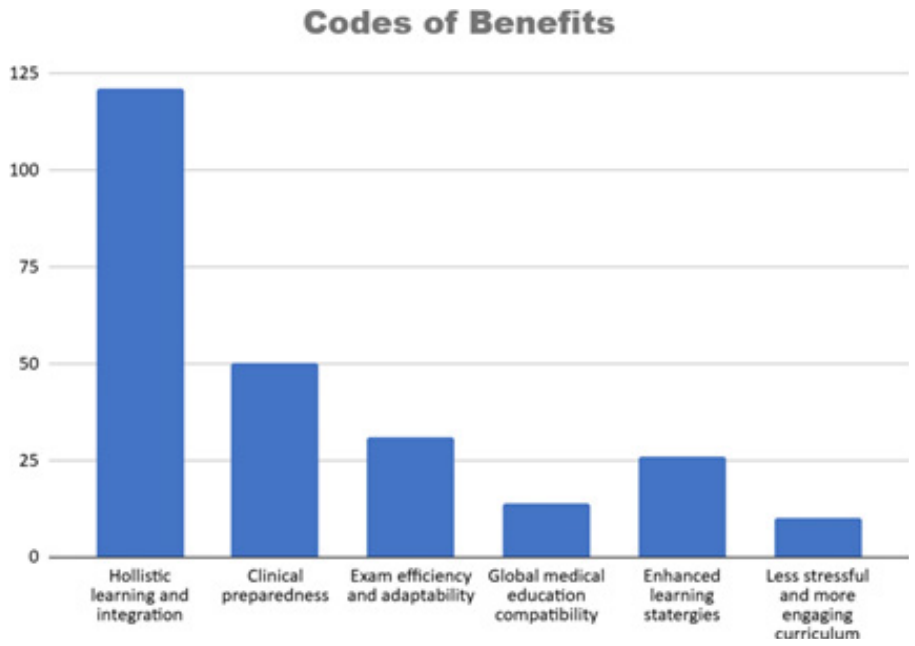

Table. Theme 2 – Challenges

Primary codes	Secondary codes
Time constraints and syllabus challenges	Delayed syllabus coverage and less repetition on the part of teachers Difficult to cover a lengthy syllabus in a rigid schedule Disproportionate distribution of syllabus among modules and tests More focus on content that has high weightage in exams leading to only superficial learning Integrating knowledge from different modules
Struggle with minor subjects	Difficulty in understanding and covering minor subjects Inability to figure out the source for studying minor subjects Lecture orientation and exam paper of pathology are different Teaching subjects of clinical years without clinical ward rotations Buying all books is stressful

Deficient clinical engagement	No wards and patient interaction
Transition issues with the new system	New system for institutes and teachers No senior batch Gap between written and OSPE of final exam
High stress and intensive efforts	Continuous study Excess repetition Stressful No semester system No sendup exam Forwarding internal assessments quarterly Hard to score and pass

Conclusion: IMS has thus been accepted by students owing to its advanced learning strategies. However, clinical ward classes and time management workshops should be arranged to enhance the impact of IMS. This study sheds light on how IMS can be optimized along with opening doors for further research on problems of IMS implementation in Pakistan.

Biography

Amna Ikhlaq, MPH, MBBS is a physician and public health professional dedicated to advancing medical education and strengthening community health through outreach and engagement. She currently serves as a lecturer in the Department of Community Medicine at Aziz Fatimah Medical and Dental College, where she also supports student research and educational innovation as Teacher Coordinator for the Research Society and a member of the Educational Research Committee. Amna is pursuing her Master of Public Health at Johns Hopkins Bloomberg School of Public Health, with a focus on health behaviour change. Her outreach includes leading mental wellness workshops for youth and co-designing anti-stigma programs. Her approach to medical education is grounded in empathy, cultural humility, and a touch of joy— because learning stops feeling like a chore when curiosity and empathy lead the charge.

Antioxidant and Antimicrobial Activities of Dandelion Root Extract (*Taraxacum officinale*) and its Cytotoxic Effect on MDA-MB-231 Breast Cancer Cells

Ismaila Ceesay, Ridwan Olanrewaju Shittu and **Pwadubashiyi Coston Pwavodi**

Faculty of Engineering, Department of Bioengineering, Cyprus International University, Turkey

Breast cancer (BC) is one of the leading causes of death globally, resulting in 2.26 million cases worldwide. Treatments to downregulate these tumor cells include surgery, immunotherapy, and chemotherapy. However, habituation is expressed by the tumor cells after using the latter. Different plants have been used to treat diseases ranging from bacterial infection to cancer. Natural health products confirmed to be potent and still undergoing clinical trials include the dandelion plant, also known as Taraxacum officinal. This study evaluated Dandelion root extract's (DRE) antioxidant, antimicrobial, and cytotoxic effects. The Gas Chromatography-Mass Spectrometry (GC–MS) result revealed the presence of bioactive compounds such as P-hydroxybenzoic, chlorogenic acid, vanillic acid, caffeic acid, lupeol, luteolin, apigenin, coumetarol and much more that are present in the DRE extract. Antioxidant activity using a diphenyl picryl hydrazine (DPPH) scavenging assay was employed, and the result suggested a stable radical IC50 value of 2.860±0.001 mg/mL. Trypan blue exclusion assay was used to determine the cytotoxic effect on MDA-MB-231 cells. Antimicrobial activity was assessed by disc diffusion assay, and the average diameter values obtained were 25 mm for gentamicin. No antimicrobial activity was observed for the extracts at different concentrations. DRE showed no inhibitory effect against two gram-negative and gram-positive bacteria pathogens. Our study indicates that DRE has proven novel in killing breast cancer cells, has a mildly vigorous antioxidant activity to scavenge free radicals, and has no inhibitory effect against some bacteria.

Biography

Ismaila Ceesay is currently a PhD candidate in Bioengineering at Cyprus International University. He obtained Bachelor in Nursing and Master's degree in Bioengineering from the same university. I have been a bacterial and cancer researcher in Cyprus International University since 2023 to date. His research interest includes, Nanomedicine for breast cancer, Translational Research, Targeted Drug Delivery System, Green Synthesis and Cancer Immunoengineering.

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ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

September 26, 2025

Effect of *m*-trifluoromethyl-Attachment on the Glutathione Peroxidase Mimicry and Antioxidant Actions of diphenyl diselenide: Essential Thiols of Electrogenic Sodium Pump as a Mechanistic Component

Ebenezer Morayo Ale[1], Steve Osagie Asuelimen[1], Victoria Ifeoluwa Ayo[1], Isioma Christain Okonta[2], Moses Adondua Abah[1], and **David Chinonso Anih[1]**

[1]Faculty of Pure and Applied Sciences, Department of Biochemistry, Federal University Wukari, Taraba State, Nigeria

[2]Faculty of Basic Medical Sciences, Department of Medical Biochemistry, University of Delta, Nigeria

m-Ditrifluoromethyl-diphenyl diselenide [DFDD (*m*-CF_3-$C_6H_4Se)_2$] is a disubstituted diaryl analog of diphenyl diselenide [DPDS ($(C_6H_5Se)_2$] in which a hydrogen atom on each aromatic ring is replaced by trifluoromethyl group (-CF_3). Herein, we investigated the effect of the -CF_3 group introduction on the GPx mimetic and antioxidant properties of DPDS. Animals were euthanized, brains were removed, and used for lipid peroxidation, cerebral sodium pump activity and thiols assays *in vitro*. Results showed that DFDD utilizes exogenous thiols [dithiol treitol (DTT), cysteine (Cys) and glutathione (GSH)] to reduce hydroperoxides (Figure 1). Furthermore, DFDD only protected against deoxyribose degradation in the presence of DTT (Figure 2). DFDD also exerted marked ($p< 0.05$) inhibitory effect on Fe^{2+}or H_2O_2 or fenton reaction-induced lipid peroxidation (Figure 3) in rat cerebral tissue homogenate. In addition, DFDD simultaneously ($p< 0.05$) inhibited pump activity (Figure 4A) and lipid peroxidation (Figure 4B) in cerebral tissue homogenate assaulted with prooxidants, with proportionate depletion of thiol (Figure 4C) in the reaction system. This assay was repeated in the presence of DTT or Cys-or GSH and results revealed that enzyme's activity was not inhibited indicating that DFDD switched from enzymes's thiols to the oxidation of medium's thiols. It is rational to conclude that the introduction of -CF_3 group to the aromatic rings of DFDD does not abolish its GPx mimetic and antioxidant properties and these still rely on thiols of cerebral electrogenic sodium pump. DFDD could be a suitable candidate for relative pharmacological effect and weak toxicity consequent to its possession of high electron withdrawing group. However, further research is needed in this regard.

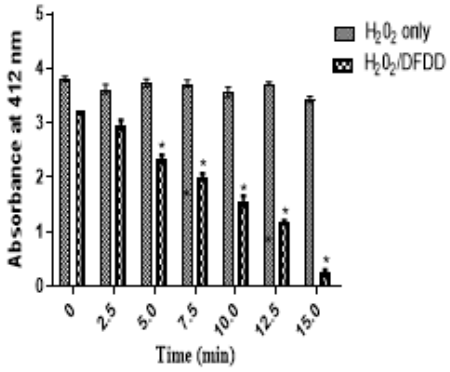

Figure 1

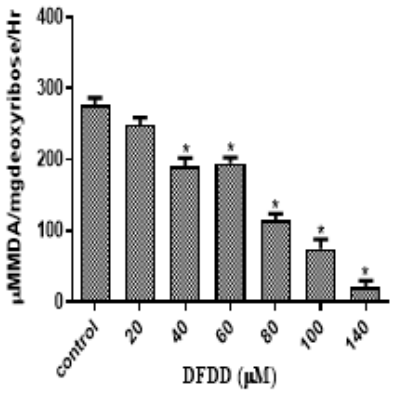

Figure 2

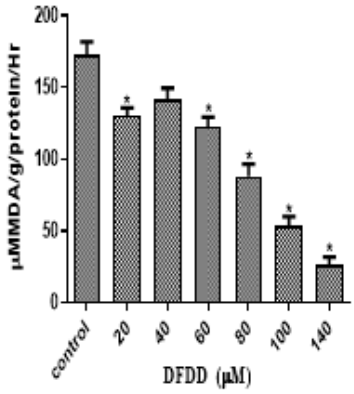

Figure 3

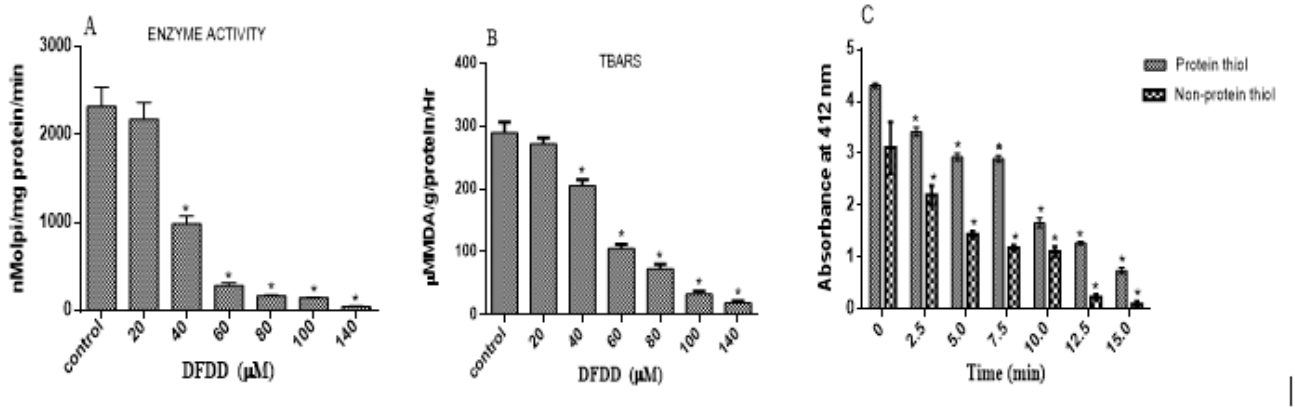

Figure 4

Biography

Ebenezer Morayo Ale was born in Ondo State, Nigeria. He received his B.Sc. and M.Sc. degrees in Biochemistry in 2012 and 2017 respectively at Kogi State University Anyigba and the Federal University of Technology Akure (FUTA) respectively, in Nigeria. He joined the Biochemistry department at Federal University Wukari (FUW), Nigeria in 2019 where he is currently a Lecturer. His research is focused on the biochemical mechanism of toxic substances as well as therapeutic potentials of organoselenium compounds and natural products. He has published numerous articles in reputable journals including Nature Scientific Reports and Elsevier Advances in Redox Research and Scientific African. He has also published many conference papers and presented papers in both local and international conferences. He is keen on deciphering the molecular mechanisms underlying diseases and developing potential lifestyle (nutrition, exercise) and pharmacological (small molecules, natural products) remedies.

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September 26, 2025

Infection of Neonates with *Staphylococcus aureus* and Methicillin-Resistant *Staphylococcus aureus* at Dormaa Presbyterian Hospital, Ghana

Jerome Adinkrah Obeng, William Gariba Akanwariwiak and **Augustina Angelina Sylverken**

Department of Theoretical and Applied Biology, Kwame Nkrumah University of Science and Technology, Ghana

Staphylococcus aureus is the second most common pathogen found in all cases of nosocomial infections globally. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a common cause of infection among preterm and critically ill newborns in neonatal intensive care units (NICUs). Newborns are predominantly susceptible to *S. aureus* and MRSA colonization and infection due to their weaker immune systems. Treating infections in newborns associated with *S. aureus* and MRSA has proven challenging due to decreasing susceptibility to first-line antibiotics leaving clinicians with few treatment options. This cross-sectional study aimed to determine the prevalence of hospital-acquired MRSA among neonates at the Dormaa Presbyterian Hospital (DPH) in Ghana, the susceptibility profile to selected antibiotics and the associated risk factors.

Venous blood samples were taken from each of the neonatal participants and inoculated into Brain Heart Infusion broth. Standard biochemical tests and were performed and 36% (9/25) of the *S. aureus* isolates were identified as MRSA. The MRSA isolates were more susceptible to Ciprofloxacin, Levofloxacin, Gentamicin, Co-trimoxazole, Tetracycline and Cephalexin but resistant to Cloxacillin, Ampicillin, Roxithromycin and Lincomycin. The study found that gestational period (χ^2=3.865, p=0.049) and longer length of hospital stay (χ^2=10.911, p=0.012) were statistically significant for *S. aureus* and MRSA infection. Surveillance systems should be put in place by health authorities at the hospital targeting decolonization of MRSA strains at the hospital as well as monitoring antibiotic resistance that occurs through inappropriate access and use of antibiotics.

Biography

Jerome Adinkrah Obeng is a skilled researcher with a history of accomplishments in academia and clinical laboratory practice. He holds MPhil. Microbiology from Kwame Nkrumah University of Science and Technology, Kumasi, Post Graduate Diploma in Science Education, University of Cape Coast and BSc. Applied Biology from University for Development Studies (U.D.S) all of Ghana.

Jerome as he is lovingly known, has more than a decade working experience in clinical laboratory practice with interest in bacteriology and focus on antibiotic resistance and has worked at Laboratory Department of Dormaa Presbyterian Hospital since 2011. His passion for science education led him to classroom, serving as Teaching Assistant (T.A) at University of Energy and Natural Resource, Sunyani, Ghana in the year 2013/2014 academic year. He currently tutors high school biology students and gives part-time lectures in biology for the Centre for Distance Education (CoDE), University of Cape Coast, Ghana, alongside his clinical practice.

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ADVANCES IN CLINICAL AND CELLULAR IMMUNOLOGY & FUTURE VIROLOGY

September 26, 2025

The Role of Tarassud Plus Application in Serving the Government and Society During COVID-19 Pandemic

Kawther Al Abri[1], Laila Alsibani[1], Abdullah Al Yarubi[2] and **Faten Hamad[3]**

[1]Sultan Qaboos University, Oman
[2]Caledonian College, Oman
[3]Sultan Qaboos University, Oman

Technology capabilities have been exploited in all major industrial and service sectors including education, logistics, business, and health. It mainly facilitated the outreach to the local community to provide, support, and deliver services. This research aimed to explore the role of technology to control the spread of Covid-19 pandemic by investigating the technological services provided by the private sector in Oman represented by Emushrif Company to support the government in serving the Omani society during Covid-19 pandemic highlighting Tarassud mobile application. To achieve the study objectives, this research adopted quantitative research methods in order to gather information related to user experience and society response about health services provided by Emushrif Company to support the government during the pandemic. Results showed that 83.6% of the surveyed individuals expressed satisfaction with the technological services offered during the Covid-19 pandemic. It also showed society's preparedness, readiness, and willingness to engage with new technologies and electronic services provided by the government. Users indicated high satisfaction with the services, indicating that the majority of respondents found the technology-driven services provided during crisis effective, reliable, and beneficial in addressing their needs or concerns amid the pandemic.

Biography

Kawthar Al Abri is an accomplished administrative professional with over 10 years of experience in enhancing productivity, efficiency, and service excellence within the administrative field. She is a highly dependable team player with a strong academic background, holding a Master of Business Administration (MBA) from the College of Economics and Political Sciences at Sultan Qaboos University, which she earned in 2015.

Kawthar also holds a Strategic Execution Diploma from Harvard Business School and is a Certified Strategy Professional (KPI Mega Library). Currently, she serves as the Head of Department within the main administration at Sultan Qaboos University. Her research interests include Strategic Management, Leadership, Human Resources, Entrepreneurship, and Business Administration.

Laila Alsibani is an experienced graphic designer at Sultan Qaboos University, with over 10 years of expertise in creating visual identities, publications, and all aspects of graphic design. She earned her Master's degree in Graphic Design (Innovation) from the University of Wollongong in Malaysia in 2021.

Laila possesses extensive knowledge in scientific research, which has equipped her to actively participate in international conferences and publish her findings in respected peer-reviewed journals. At one such conference, she was honored with the award for Best Scientific Paper.

Currently, Laila works at the Omani Studies Center at the university, where she is dedicated to further advancing her career in both graphic design and scientific research, while continually contributing to her field.

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September 26, 2025

Neutrophil to Lymphocyte Ratio: Association with Microcirculatory Changes Detected by Nail Fold Capillaroscopy in Scleroderma Patients and its Relation to Disease Severity

Rahma Elziaty[1], Rasha M. Hammoda[1], Nermin H. El-Gharbawy[2], Ahmed A. Khalifa[1] and Amira A. Moharram[3]

[1]Faculty of Medicine, Rheumatology Division, Department of Internal Medicine, Ain Shams University, Egypt

[2]Faculty of Medicine, Department of Rheumatology and Rehabilitation, Ain Shams University, Egypt

[3]Faculty of Medicine, Department of Clinical Pathology, Ain Shams University, Egypt

Background: Microvascular alteration in scleroderma patients is well documented. Microcirculatory changes can be visualized by nailfold capillary microscopy (NFC) examination which is a safe and noninvasive technique. This study aims to identify possible association between neutrophil-to-lymphocyte ratio (NLR) and microvascular changes detected by nailfold capillaroscopic examination in scleroderma patients.

Results: The study was conducted on 25 patients with systemic sclerosis. On studying the correlation of NLR with laboratory parameters, we found significant positive correlations with erythrocyte sedimentation rate "ESR" and C-reactive protein "CRP" values ($p = 0.000$). Regarding the clinical manifestations, higher NLR was significantly related to the presence of digital ulcer ($p = 0.023$) and Raynaud's phenomenon ($p = 0.015$). There was significantly negative relation between NLR with cyclophosphamide treatment. Regarding NFC examination's results, there was significant negative correlation of NLR with capillary number/mm ($p = 0.000$) and significant positive correlation of NLR with capillary width ($p = 0.005$), and a significant relation of NLR with the presence of capillary hemorrhage and presence of active scleroderma pattern ($p = 0.010$) was also reported.

Conclusion: High N/L ratio as a marker of inflammation was found to reflect severity of systemic sclerosis and is associated with larger capillary diameter and lower capillary number in nailfold capillaroscopy. Active scleroderma pattern was associated with high N/L ratio. Further longitudinal studies are needed to determine the frequency of nailfold video-capillaroscopy and N/L ratio.

Biography

Lecturer of internal medicine “Rheumatology division”, she has been engaged in adult clinical rheumatology for 13 years. One of the Ain Shams Uveitis team and rheumatology consultant of uveitis clinic at Ain Shams University hospital “El Demerdash hospital” for 3 years now. Interested in Capillaroscopy and a member of the Capillaroscopy team in her department. Participated as speaker and tutor in Capillaroscopy workshop in Egypt and Competed the EULAR course of Capillaroscopy in Vienna 2024. Egyptian society of microcirculation board member and director of scientific committee of the annual conference of the society. Teaching coordinator in her department. Author of 1st and 2nd edition Rheumatology handout for 5th year medical student at Modern University for Technology & Information (MTI), Faculty of Medicine. Interested in education, research and have many publications.

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September 26, 2025

A Novel Technique for Enhancing the Take of Pelnac® Dermal Substitute in Deep Dermal Burns of the Upper Limb: A Randomized Controlled Trial

Heidi Ashraf Rady, Adel Michel Wilson, Ahmed Adel Nawar and **Laila Ahmed Aboul Nasr**

Kasr Alainy Faculty of Medicine, Cairo University Hospitals, Egypt

Background: Burn injuries, particularly those affecting large body areas, pose significant challenges due to limited availability of donor sites for autologous skin grafting. Skin substitutes have been developed to overcome these limitations; however, research on the use of Pelnac dermal substitute for acute deep dermal burns remains limited. This study evaluates the effectiveness of Pelnac in treating such injuries on the upper limb. The detailed findings of this trial have been published in the European Journal of Plastic Surgery (DOI: https://doi.org/10.1007/s00238-025-02273-x).

Methods: A randomized controlled trial was conducted on 46 patients presenting with acute burn injuries at Kasr Al-Ainy Cairo University Hospital between March 2021 and August 2022. Patients were divided into two groups: the Graft-Only Group (n=23) and the Pelnac Group (n=23). The primary outcome measured was graft take success rate; secondary outcomes included scar quality, functional recovery, and patient satisfaction with aesthetic appearance and functionality.

Results: In terms of coverage success, Graft only Group achieved 100% success rate, while Pelnac take was unsuccessful in the first 17 patients. Upon observing the first successful case, we noted that there was no dermis remaining after excision, prompting us to implement more thorough debridement from the outset to reach the subcutaneous fat or fascia. Consequently, the Pelnac coverage was successful in the subsequent four patients, with a 22.7% success rate, (followed by autografting as a second stage). In terms of scar quality improvement, as measured by the Vancouver Scar Scale, the Pelnac group had a significantly lower average VSS value (2.40∓1.52) compared to Graft Only Group (7.45∓1.68) with (P<0.001).

Pelnac Group also had significantly higher patient satisfaction with aesthetic appearance compared to the graft-only group ($P < 0.001$). There were no significant differences between the two groups regarding patient satisfaction with functional recovery and the average DASH score ($P > 0.05$).

Conclusion: Pelnac could be regarded as a promising modality for the treatment of acute full thickness burns and can be effectively applied in partial-thickness burns involving extensive surface area damage. Achieving a proper wound bed through thorough debridement from the start reaching a bed of fat or fascia is critical for Pelnac's success, where it serves as a protective cover reducing fluid loss and contamination risk. Full details and analysis of this study are accessible in the European Journal of Plastic Surgery (DOI: https://doi.org/10.1007/s00238- 025-02273-x).

Biography

Dr. Heidi Ashraf Rady is a Lecturer of Plastic and Reconstructive Surgery at Cairo University, Egypt. She holds an MD in plastic surgery and is an expert in both reconstructive and cosmetic surgical procedures.

Her research interests focus on burn management, wound healing, and scar treatment. She has developed strong expertise in the treatment of acute burn injuries and is committed to advancing care through academic research.

Dr. Rady actively contributes to teaching and mentoring medical students and residents in Cairo University. Her academic career combines clinical excellence with a deep commitment to research, particularly in the areas of acute burn care, burn reconstruction, and innovations in wound healing.

She has participated in national and international conferences, presenting her work on burns and reconstructive surgery. Dr. Rady aims to bridge the gap between clinical practice and academic research to improve patient outcomes in burn care. She is currently expanding her research in tissue regeneration and scar management.

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&
FUTURE VIROLOGY

September 26, 2025

A novel synthesis of a chlorophyll *b*-gold nanoconjugate used for enhancing photodynamic therapy: *In vitro* study

Shaimaa M. I. Alexeree

Department of Laser Application in Photobiology & Photochemistry, National Institute of Laser Enhanced Science, Cairo University, Egypt

Chlorophyll, the essential green pigment in plants, is considered a promising natural photosensitizer (PS) for photodynamic therapy (PDT). However, it suffers from lower stability in the physiological conditions that depress its efficacy in the PDT. The combination of nanotechnology and PDT is becoming a promising approach to combat tumors. Gold nanoparticles (Au NPs), for example, are proposed as suitable carriers that can increase chlorophyll stability when conjugated together. In the present work, the impact of Au NPs conjugation in enhancing Chlorophyll b (Chl *b*) efficiency in the PDT of cancer cells has been emphasized. A chemical method using a natural product synthesized a novel Chlorophyll *b*-gold nanoparticles nanoconjugate (Chl *b*-Au NCs). The synthesized Chl *b*-Au NCs were characterized *via* UV–Vis. spectroscopy, Fourier-transform infrared spectroscopy (FTIR), Laser-Induced Fluorescence (LIF), Zeta potential, Dynamic light scattering (DLS), and Transmission electron microscopy (TEM). Chl *b* is characterized by a formyl group (CHO), which is absent in Chl *a*. This group leads to the formation of an electrostatic reaction between the positive charge of Chl *b* and the negative charge present on the surface of the gold nanoparticles. Moreover, Chlorophyll *b* loading on the biosynthesized gold nanoparticles (Au NPs) increases their photostability. The efficiency of the PDT was then studied on the MCF7 and the HepG2 cells using this conjugation. As a result, the prepared Chl *b*-Au NCs showed low dark toxicity, excellent photostability under laser irradiation of wavelength 650 nm, in addition to a significantly high PDT efficacy against tumor cells *in vitro*. This is due to the enhanced cellular uptake and the high reactive oxygen species (ROS) production upon laser irradiation. Therefore, the designed Chl *b*-Au NCs could be a photo-therapeutic agent for enhancing cancer therapy in future applications.

Biography

Shaimaa M. I. Alexeree an esteemed Associate Professor specializing in photobiology and nanobiotechnology at Cairo University's National Institute of Laser Enhanced Science (NILES). Her research spans a diverse range of interdisciplinary fields, including photobiology, bio-photonics, biotechnology, nanotechnology, toxicology, drug delivery, zoology, cell biology, and biosensors. Her Ph.D. thesis, titled "***Toxicity & Photodynamic Treatment Using Gold Nanoparticles - Photosensitizer Nanoconjugates: In vivo Study***", was awarded in December 2017 and established her expertise in laser applications in photochemistry and photobiology, with a focus on nanomedicine and photodynamic therapy. She is promoting multidisciplinary research collaborations that address complex scientific challenges. Her academic journey includes a Master's degree in Biotechnology and a comprehensive background in molecular biology, genetics, nanotechnology, and zoology. She have been actively participating in several international conferences. She have been a consultant in several funded projects, including efforts to integrate **AI** methods with laser imaging for cancer detection and developing nano-sensors for pharmaceutical security.

Transmission Dynamics of a Stochastic Model of Chikungunya Virus

Milad Fahimi, Kazem Nouri and **Leila Torkzadeh**

Faculty of Mathematics, Department of Mathematics, Statistics and Computer Sciences, Semnan University, Iran

In this paper, we construct and formulate a novel mathematical model for the spread of epidemic diseases with vaccination especially for Chikungunya transmitted virally in Brazil. This model includes seven biological components consisting of susceptible (S), exposed (E), infected (I), recovered (R), vaccinated (V), quarantined (Q) and dead individuals (D). This study considers various parameters that affect the spread of the Chikungunya disease and fills gaps in other models and epidemiology data. According to the fluctuating essence of studying epidemic diseases, especially Chikungunya, implementation of stochastic differential equations and Brownian motion is one of the innovations of this comprehensive model compared to other simple models for Chikungunya transmission. Additionally, we calculate the basic reproduction number by the next-generation matrix method in order to demonstrate the level of the Chikungunya virus outbreak. Moreover, dynamical analysis is presented as a theoretical foundation of our proposed epidemic model. We introduce specific conditions in which the disease tends to extinct stochastically. Moreover, numerical simulation and data fitting are performed using Euler–Maruyama method to illustrate and validate the efficiency of the proposed model and its accordance using real data for the Chikungunya outbreak in Espirito Santo, Brazil.

Biography

Dedicated and accomplished academic with a Ph.D. in Applied Mathematics Numerical Analysis specializing in Biological Mathematics

Education:

Ph.D. in Applied Mathematics (Numerical Analysis) - Semnan University, Semnan, Iran [2024]

Academic Positions:

Assistant Professor and Researcher Teacher training University [Semnan, Iran]

Assistant Professor and Researcher Semnan University, [Semnan, Iran]

Research and Publications:

Publications: Authored 23 research papers in international journals, contributing to the field of Applied Mathematics and Numerical Analysis.

Conference Presentations:

Speaker at the World Congress of Mathematics, Moscow, Russia (2022)

Speaker at the Conference, Sultan Mehmet Fatih University, Istanbul, Turkey (2023)

Awards and Honors:

Distinguished Student Award at Bachelor's, Master's, and Doctoral levels

Member of the National Elite Foundation of Iran (since 2021)

Professional Activities:

Reviewer Biomathematics Conference 2023, Mazandaran University.

Reviewer for international journals, including the journal of Semnan University (IJNAA) and the journal (Chaos: An Interdisciplinary Journal of Nonlinear Science)

Languages:

Persian (Native)

English (Proficient)

An Unusual Cause of Cerebellitis in an Immunosuppressed Elderly Man: Disseminated Scedosporium Boydii Following Gardening Related Injury

Yomon Jasim[2], Abdullah Abdullah[1] and **Mohamed Alagili[2]**

[1]General Medicine, Royal Free NHS Foundation Trust - Barnet Hospital, UK
[2]Geriatrics, University Hospitals Dorset NHS Foundation Trust, UK

Scedosporium boydii is an uncommon but increasingly recognized cause of opportunistic infections, particularly in immunocompromised individuals. We describe the case of a 92-year-old man on long-term corticosteroids who presented with progressive gait instability, confusion, and posterior headache. Initial neuroimaging revealed parietal-occipital and cerebellar lesions, raising concerns for malignancy or infarction. Although corticosteroid therapy initially provided temporary symptom relief, the patient subsequently deteriorated, developing skin changes consistent with cellulitis in the upper limb and rapid progression of neurological lesions on repeat imaging-findings more consistent with an infectious rather than malignant process. Cultures from the skin lesion grew Scedosporium boydii, prompting initiation of voriconazole and flucytosine. Despite appropriate antifungal therapy, the patient's condition worsened, culminating in multiorgan failure and death. Retrospective history revealed a fall in a muddy garden, suggesting direct cutaneous inoculation as the source of infection, an atypical presentation since most cases are associated with near-drowning incidents. This case highlights the diagnostic challenges posed by rare fungal CNS infections that mimic more common intracranial pathologies, and underscores the importance of early tissue sampling and multidisciplinary collaboration in managing such complex cases.

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September 26, 2025

What Water Conceals: Pandemic Risks No one is Watching

Jhan. S. Saavedra T[1,2], Janeth Cecilia Gil Forero[3] and **María Virginia Pinzón-Fernández[1]**

[1]Cali, Colombia
[2]Grupo de Investigación en Salud (GIS), Departamento de Medicina Interna, Universidad del Cauca, Colombia
[3]Universidad Santiago de Cali, Facultad de Medicina, Colombia

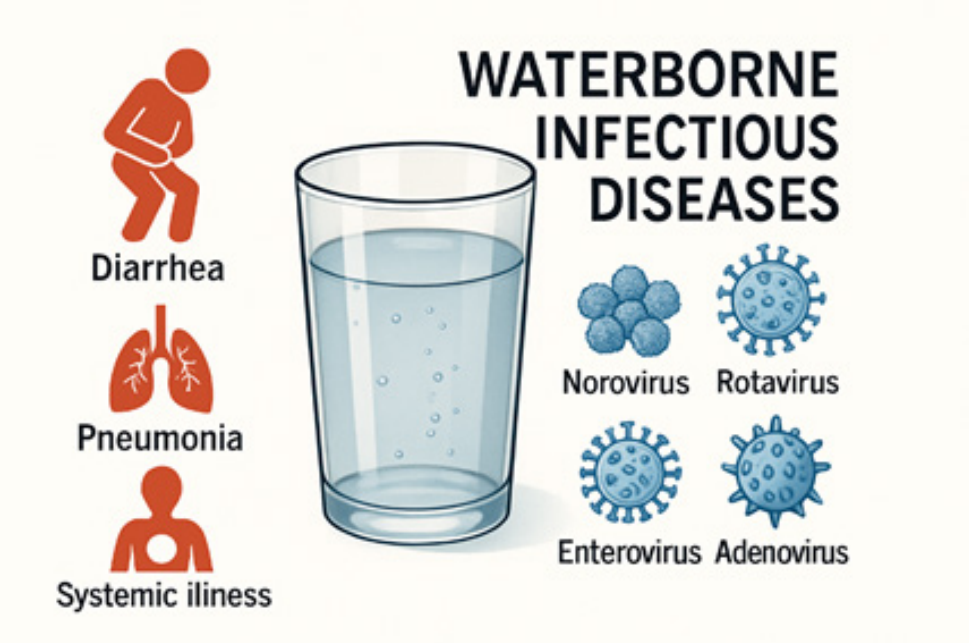
Water has always been a symbol of life and renewal. Yet throughout history, it has also served as a silent vehicle for some of the most devastating epidemics. Today, waterborne infectious diseases continue to cause millions of cases of diarrhea, pneumonia, and systemic illness, particularly among vulnerable populations. What is most concerning is that these threats persist and evolve, even in settings where potable water and sanitation are assumed to be secured?

In recent decades, outbreaks such as the *Cryptosporidium* crisis in Milwaukee (1993), which affected more than 400,000 people, or the seasonal peaks of Legionella in urban settings, have demonstrated that risk remains even in countries with robust infrastructure. Compounding this is the growing pressure of climate change: rising temperatures and extreme events, such as heavy rainfall and prolonged droughts, are reshaping the ecology of aquatic pathogens, facilitating their proliferation and spread. Recent studies have also revealed that enteric viruses like norovirus and adenovirus can be detected in wastewater before cases are reported by clinical systems.

Resilient viruses such as norovirus, rotavirus, enterovirus, and adenovirus pose a significant threat due to their high infectivity, environmental stability in water systems, and ability to circulate silently through sewage without early clinical detection.

Despite these realities, traditional surveillance systems remain predominantly reactive. Modern tools, such as wastewater-based epidemiology (WBE) and environmental sensors,

have shown strong potential, yet they are not systematically integrated into public health strategies. Understanding and anticipating waterborne pandemic threats is not merely a technical necessity: it represents a new frontier for global health.



Biography

Dr. Jhan Saavedra is a clinical immunologist and member of the Health Research Group (GIS) in Popayán, Colombia. His work addresses the complex intersections between immunity, environment, and recovery in vulnerable populations. He focuses on two often-overlooked dimensions of global health: the silent threat of waterborne pathogens and the profound abandonment faced by patients after surviving critical illness. At GIS, he collaborates on research exploring how ecological and immunological factors shape epidemic vulnerability, particularly in low-resource settings. Dr. Saavedra is the founder of the RISE model, Recovery in Sepsis Empowerment, a comprehensive framework for post-ICU care that integrates functional rehabilitation, immune restoration, emotional support, and social reintegration. His approach reflects a vision of medicine that transcends survival and seeks to restore dignity and autonomy. Whether through environmental vigilance or long-term patient recovery, his mission is to develop systems that accompany individuals not only during crisis, but throughout their path back to life.

Molecular Imaging of Tumor Infiltrating Lymphocytes in Living Animals Using a Novel Tracer

Arutselvan Natarajan

School of Medicine, Stanford University, USA

Tumor infiltrating lymphocytes (TILs) in tumor microenvironment (TME) plays a crucial role in determining tumor growth, metastasis, and response to treatment; it could serve as a predictive marker in cancer treatment response evaluations in various therapeutic interventions including chemotherapy and immunotherapy. The CD3, CD4 and CD8 proteins represents a promising target for diagnostic imaging of TILs to assess the immune state of TME *in vivo*. Anti-CD3 tracer was developed against these receptors using engineered fibronectin III domain (FN3) protein. This protein was conjugated to contrast enhancing (CE) microbubbles (MBs) or near infrared 800 dye for US imaging, and optical imaging, respectively. MBs were prepared using DSPE-CD3-FN3 or DSPE-sc-FN3 (~5×10^7 MBs/mL) to image CD3 expressing TILs by CE-US. To image TILs *in vivo*, two different mouse models of breast cancers (4T1 breast tumor in BALB/c mice, and genetically engineered transgenic mice model [FVB/N-Tg (MMTVPyMT)634Mul/J] (n=3/group) develops spontaneous breast cancer in the mammary fat pad). Lago-Spectral imaging system and Vevo 2100 high-frequency US system with M250 transducer to quantitatively evaluate TILs in TME by optical NIR signal, and the US-differentially targeted enhancement (dTE) signal. Both the imaging modalities developed from the CD3-FN3 binder were able to target *in vivo* TILs within the TME *in vivo*. In 4T1 tumor model, NIR optical imaging shown specific signal to TILs in TME over time (4, 24 and 48 hours, see figure) after initial binder injection. The NIR imaging showed that NIR-CD3-FN3 can detect TILs within the tumor with the highest signal to background ratio at 24 hours after initial binder injection with a mean radiant efficiency (TRE ± SD) of $6.5x10^{10}±1.5x10^{10}$ [photons/s]/[μW/cm^2]. TILs within the tumor showed a specific imaging signal of $9.5x10^{10}$ ± $4.6x10^{10}$ at 48 hours p.i. The *ex-vivo* tumor-to-muscle ratio showed a 27-fold increase in signal for 4T1 tumor. The US imaging results of MBs prepared using CD3-FN3

(TMBs) provided a target specific contrast signal in the tumor vasculature of ~4-fold higher than the negative control NT-MBs. The *in vivo* results of this tracer clearly demonstrated that the CD3-FN3 binder was able to bind with high specificity to CD3 marker expressed by T-cells in the TME. The *ex vivo* analysis of tumors, and the organs of animals with 4T1 tumors (at 24 or 48 p.i.) confirmed that the NIR-CD3-FN3 probe was able to bind specifically to CD3 marker expressed by the T-cells. Overall, antiCD3 targeting novel tracers can be used in clinic for diagnostic imaging of solid tumors *in vivo* for the assessment of TILs in the TME for immunotherapies.

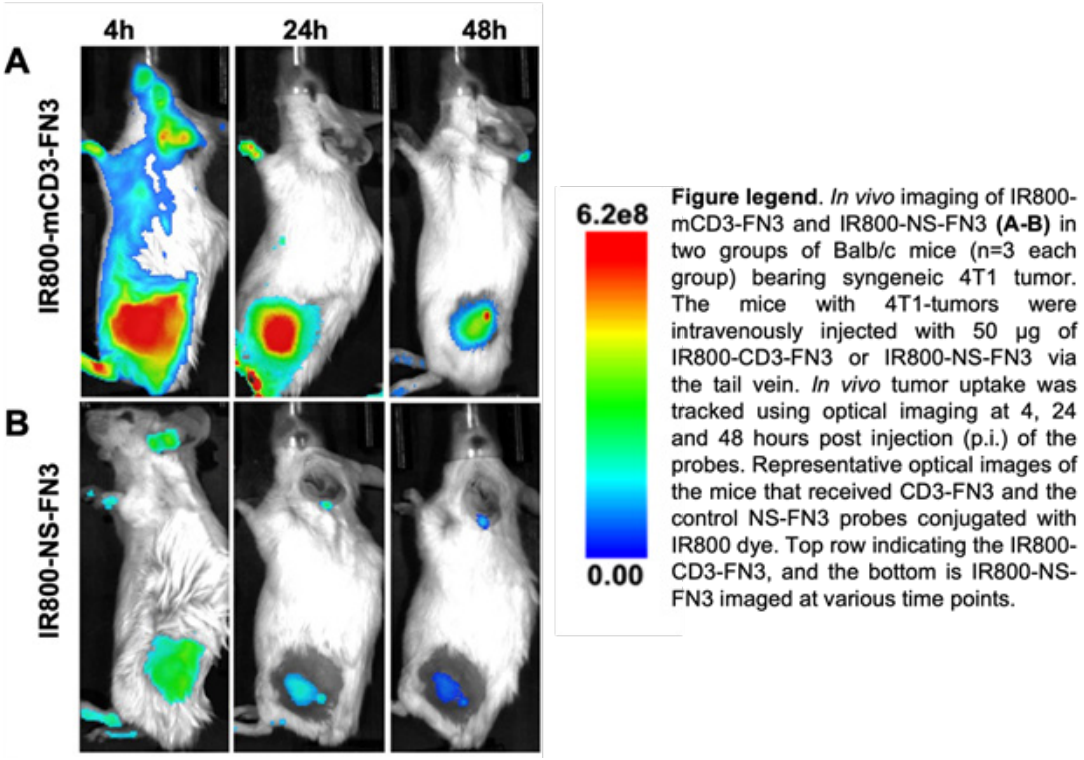


Figure legend. *In vivo* imaging of IR800-mCD3-FN3 and IR800-NS-FN3 **(A-B)** in two groups of Balb/c mice (n=3 each group) bearing syngeneic 4T1 tumor. The mice with 4T1-tumors were intravenously injected with 50 µg of IR800-CD3-FN3 or IR800-NS-FN3 via the tail vein. *In vivo* tumor uptake was tracked using optical imaging at 4, 24 and 48 hours post injection (p.i.) of the probes. Representative optical images of the mice that received CD3-FN3 and the control NS-FN3 probes conjugated with IR800 dye. Top row indicating the IR800-CD3-FN3, and the bottom is IR800-NS-FN3 imaged at various time points.

Biography

Arutselvan Natarajan, PhD, is a Senior Research Scientist from the Stanford University in the division of Molecular Imaging Program at Stanford, at the Department of Radiology. He is currently working in chemical biology, molecular imaging, immunoimaging and immunotherapy for cancer treatment translational research with more than 25 years of experience. Dr. Natarajan is a leading scientist in several cancers related projects for preclinical to clinical drug development for cancer diagnosis, imaging and therapy. His research interests are the development of novel PET, Optical and Ultrasound imaging scaffolds using antibodies to small molecules and nanoparticles. He represented the leading author for several proof-of-concept cancers related imaging and therapeutic studies. Dr. Natarajan published more than 150 research articles and book chapters in various scientific journals and conferences.

Development, Scale-Up, And Clinical Bioavailability High Drug Loaded Redispersible Amorphous Nanoparticle Formulations of BCS IV Compound

Mengqi Yu

AbbVie Inc, USA

Amorphous solid dispersion (ASD) is an enabling approach utilized to deliver poorly soluble compounds. ASDs can spontaneously generate drug-rich amorphous nanoparticles upon dissolution, which can act as a reservoir for maintaining supersaturation during oral absorption. But, conventional ASDs are often limited in drug loadings to < 20 %. For indications where the dose is high, this can translate into a significant pill burden. The aim of this research was to develop a high drug loading (DL) amorphous nanoparticle (ANP) formulation that can release the drug-rich nanoparticles into solution upon contact with aqueous environment. Nanoparticles were directly engineered using solvent/anti-solvent precipitation. The obtained nanoparticle suspension was then concentrated followed by solidification to a 45% drug loaded re-dispersible amorphous powder by freeze drying (FD). Particle size distribution, physical stability, and thermal properties of the formulations before and after processing steps, as well as in storage were analyzed to understand behaviors of these drug rich nanoparticles, which enabled successful formulation/process development. An oral suspension of this FD powder demonstrated promising pharmacokinetics in dogs when compared with a suspension from 10% drug loaded ASD. This preclinical data enabled a human proof-of-concept assessment opportunity. Challenges manifested during scale-up from 50g (lab scale) to 280g (for clinical supply). Given the preclinical data, formulation change was restricted, therefore, process modifications were implemented. Cold collection after precipitation prevented particle growth but resulted in 75 nm particles at clinical scale (CS), compared to 150 nm at laboratory scale (LS). This size decrease rendered stabilizer amounts suboptimal for FD operation. Consequently, when FD powder was resuspended in water a smaller fraction of particles was below 450 nm (by filtration), ~65% for CS compared to ~85% for LS. Formulation was stable for > 6 months, evaluated

by monitoring moisture content, assay, powder X-ray diffraction (PXRD), and redispersion time. Despite ~65% re-dispersibility, this 45% DL formulation oral suspension in humans had higher C_{max} and AUC ~73% and ~46% respectively in fasted-state, and under fed-state it met bioequivalence criteria for AUC but C_{max} was 20% lower compared to reference (10% DL ASD tablets) demonstrating advantage of ANP strategy over ASD approach.

Biography

Miki Yu is a Senior Scientist at AbbVie, in small molecule drug product design and development, responsible for leading formulation and process development for early stage clinical phases. Miki obtained her Bachelor as well as PhD degree in chemical engineering. Her thesis was in mixing and segregation of granular materials. After her PhD work, she joined AbbVie as a postdoc working on amorphous nanoparticles, aiming to develop formulation/process that achieve similar bioavailability to ASD at a high drug loading (>45% w/w).

Immune Genomics in Treatment Resistant Bipolar Depression

Angelos Halaris

Loyola University Medical Center, Loyola University Stritch School of Medicine, USA

Immune system upregulation and inflammation contribute to treatment resistance in depressive illness and to the chronicity of depression in non-remitters. Inflammatory biomarkers, such as C-reactive protein (CRP), may predict poor treatment outcomes. In a previously published study of treatment resistant bipolar depression (TRBDD), we demonstrated significant benefit of celecoxib (CBX) adjunctive treatment in combination with escitalopram. The CBX group had significantly lower HAMD-17 scores vs. placebo at weeks 4 and 8. Therefore, SSRI + CBX is more effective than SSRI + placebo in reversing treatment resistance and augmenting antidepressant response in BDD. Baseline CRP levels were significantly increased amongst TRBDD patients versus HC subjects, indicating that CRP may be a useful biomarker for BDD. At week 8 CRP was significantly decreased in the CBX group vs. placebo. Non-carriers of rs3093059 and rs3093077 had significantly lower baseline CRP blood levels than carriers. Non-carriers receiving CBX had the highest rates of response and remission, and the lowest stress scores. We concluded that carriers of the CRP SNPs may have higher baseline CRP levels, and non-carriers benefit more from CBX co-therapy. Determination of the carrier status in conjunction with pretreatment blood CRP level measurement may contribute to personalized psychiatric practice. Additionally, we investigated the relationship between perceived stress, serum BDNF levels, and genetic polymorphisms in TRBDD patients. We identified a significant negative correlation between baseline BDNF serum levels and PSS-14 scores, indicating an association between perceived stress and lower BDNF levels, or that higher BDNF levels might represent a protective effect against stress. Analysis of SNPs (rs6265, rs10835210, rs1519480) revealed trends indicating how genetic variations might influence BDNF levels and perceived stress. These findings underscore the importance of combining blood levels of inflammation biomark-

ers with genomic variants (SNPs) affecting the expression of the biomarker under investigation in psychiatric patients.

Biography

Angelos Halaris graduated from the University of Munich School of Medicine and received research training at the Max-Planck Institute for Psychiatry in Munich. He trained as a research fellow in psychopharmacology and resident in psychiatry at the University of Chicago. He joined the faculty at the University of Chicago and later he accepted a professorship at UCLA School of Medicine. He has served as Chair of Psychiatry at MetroHealth Medical Center, an affiliate of Case Western Reserve University, of the Department of Psychiatry at the University of Mississippi Medical Center and of the Department of Psychiatry at Loyola University Stritch School of Medicine in Chicago. Throughout his career he has taught medical students and psychiatric residents in clinical psychiatry and psychopharmacology. His research interests include basic and clinical psychopharmacology, biological psychiatry, psychoneuroimmunology, autonomic nervous system, glutamatergic transmission, heart brain axis, pharmacogenomics, biomarkers of inflammation in mood disorders and psychogenomics. He has published over 200 articles, numerous chapters, and four books. He serves on several editorial boards.

Immunogenicity of Adalimumab Reference Product and Adalimumab-Adbm in Patients with Rheumatoid Arthritis, Crohn's Disease and Chronic Plaque Psoriasis: A Pooled Analysis of the VOLTAIRE Trials

Vibeke Strand[1], Dorothy McCabe[2] and **Shaun Bender[2,3]**

[1]Division of Immunology/Rheumatology, Stanford University School of Medicine, USA
[2]Boehringer Ingelheim Pharmaceuticals, Inc, USA
[3]Alnylam Pharmaceuticals Inc, USA

Objective: This post hoc analysis compared the immunogenicity of the biosimilar adalimumab-adbm (Cyltezo) with the adalimumab reference product (Humira) across indications, including rheumatoid arthritis (RA), Crohn's disease (CD) and plaque psoriasis (PsO), and by patient sex in the VOLTAIRE trials program.

Methods: In each active-comparator randomized controlled trial (RCT), immunogenicity was assessed at various time points by the proportion of patients with antidrug antibodies (ADAs) and neutralizing antibodies (nAbs), using acid dissociation followed by electrochemiluminescence assay. Assay sensitivity was 50 ng/mL, and drug tolerance was ≥30 µg/mL (free drug) at the low positive control level.

Results: Minor differences in immunogenicity parameters (ADAs, ADA titers and nAbs) were evident between adalimumab-adbm and adalimumab RP across these three immune-mediated inflammatory diseases. The proportion of ADA-positive and nAb-positive patients increased from baseline over time in all three RCTs, as expected, and was similar in the RA and CD RCTs but with higher numbers of ADA-positive and nAb-positive patients reported in the PsO trial. Subgroup analysis by patient sex showed the same trend.

Conclusions: Differences among the RCTs may partially be explained by concomitant background therapy (methotrexate) in the RA trial, stable doses of azathioprine, 6-mercaptopurine or methotrexate in 36% of patients with CD and absence of background therapy in the PsO RCT. The analyses further confirm the biosimilarity of adalimumab-adbm with the adalimumab reference product across immune mediated inflammatory diseases and pro-

vide supporting evidence that adalimumab-adbm is an interchangeable biosimilar with consistent clinical results in patients originally treated with the reference product.

Note: This was published as Strand V et al: BMJ Open 2024;14:e081687. *doi:10.1136/ bmjopen-2023-081687*

Biography

Vibeke Strand, MD is an adjunct clinical professor in the Division of Immunology and Rheumatology at Stanford University School of Medicine since 1993, previously at UCSF. Since 1991, she has led a consulting practice offering clinical research and regulatory strategy expertise to pharmaceutical / biotech companies for development of new therapies in rheumatology.

She has authored >530 publications, is a Fellow of the American College of Physicians (1982), Master of the American College of Rheumatology (2015) and member of the Cosmos Club (1994). She has been a member of the Executive Committee of OMERACT consensus conferences since its inception in 1992–; Steering Committee of Group for Research and Assessment of PsO and PsA [GRAPPA] (2003–) and Board of International Dermatology Outcome Measures [IDEOM] (2019–). She serves on the Medical and Scientific Committee of Northern California Chapter of the Arthritis Foundation (2005–)

Targeting Stem Cell-Myeloid Cell Crosstalk to Overcome Cancer Relapse from Immunotherapy

Yuxuan Miao, Weijie Guo and **Jingyun Luan**

Ben May Department of Cancer Research, The University of Chicago, USA

Cancer immunotherapies have demonstrated remarkable therapeutic potential, yet they often fall short of achieving sustained responses in numerous solid tumors. Our previous studies uncovered a mechanistic model explaining cancer relapse following immunotherapy treatments which implicates a subset of stem cell-like tumor-initiating cells that can better survive from anti-tumor immune attacks. Our new studies have now raised the intriguing possibility that these tumor-initiating cells harbor unique molecular programs that enable them to shape their immune microenvironment, rendering them more resistant to anti-tumor immunity. The aim of our study is to unveil the stem cell-specific molecular program that is responsible for establishing interaction patterns between tumor-initiating cells and immune cells, which underlie immunotherapy resistance and drive cancer relapse in squamous cell carcinomas. Using a combination of immune cell lineage tracing, single-cell RNA-sequencing and spatial transcriptome profiling, we have uncovered an intriguing dialogue between tumor-initiating stem cells and neutrophils in various forms of squamous cell carcinomas. While successful immune checkpoint blockade treatments can effectively program neutrophils, allowing majority of tumor-associated neutrophils to regain anti-tumor activities, we uncovered a subset of neutrophils residing at the tumor stroma interface that can retain their immune suppressive functions. Importantly, we further identified a group of TGFβ-responsive tumor-initiating stem cells possess the capacity to block the interferon responses in neutrophils, preventing them from being reprogrammed by immunotherapies. Delving into the mechanisms., we have identified a stem cell-specific molecular circuit that enables tumor-initiating stem cells to modulate the local lipid profiles, therefore, blocking the neutrophils in their neighborhood from responding to interferons. Our findings position tumor-initiating stem cells at the heart of orchestrating the

plasticity and cell state of neutrophils in cancer. Moreover, we have uncovered novel targets that can be exploited to disrupt the communication between stem cells and neutrophils, potentially preventing cancer relapse following immunotherapy.

Biography

Dr. Miao obtained his PhD from Duke University studying the immune responses against bacterial infections. He then completed his postdoctoral training as a Jane Coffin Childs fellow with Dr. Elaine Fuchs at the Rockefeller University focusing on the role of skin stem cells during wound repair and skin cancer development. In September 2020, Dr. Miao joined the University of Chicago, Ben May Department of Cancer Research and UChicago Comprehensive Cancer Center as an assistant professor. The goal of his research program is to dissect the crosstalk between tissue stem cells and immunity, with a special focus of inflammatory adaptive and immune resistance mechanisms specific to epithelial stem cells.

Mast Cells as Targets for Therapeutic Strategies

Alicia B. Penissi

Facultad de Ciencias Médicas, Instituto de Histología y Embriología (IHEM-CONICET-UNCUYO), Universidad Nacional de Cuyo, Argentina

Taking into account that the identification of novel molecules for the effective treatment of inflammatory and immune diseases is one of the primary present medical needs and one of the major goals of the pharmaceutical industry, our work aims to provide new therapeutic strategies and a deeper understanding of the mechanism of action of new drugs related to such disorders. Our research team has shown that some natural and synthetic lactones developed by our laboratory and phenols from virgin olive oil inhibit mast cell activation induced by immune and non-immune pathways, thus acting as mast cell stabilizers. Recently, we have explored whether applying these mast cell stabilizers will be useful for the prevention and/or treatment of mast cell-mediated disorders.

Diseases investigated include peptic ulcer, tumor development, multiple sclerosis, and allergic asthma. Our laboratory investigates the role of mast cells in such pathologies and the pharmacological regulation of mast cell activation by conducting studies on animal and human mast cells and analyzing specimens derived from patients with mast cell disorders. Biochemical, chemical, cell biology, molecular biology, and various microscopic techniques were used, as well as animal models for the investigated diseases in which mast cells are involved. These studies may increase understanding of these disorders and contribute to new preventive measures, diagnoses, and treatments.

Biography

PhD graduate from the School of Chemistry, Biochemistry, and Pharmacy, Universidad Nacional de San Luis, Argentina.

Postdoctoral training at the Laboratory of Cell Biology, Department of Pharmacology, Faculty of Biological Sciences, Universidad de Concepción (Chile) and at the Department of Physiology and Pharmacology, Faculty of

Medicine, Universidad de Salamanca (Spain).

Independent Researcher, Carrera del Investigador Científico y Tecnológico del Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Institute of Histology and Embryology (IHEM-CCT Mendoza-CONICET), Faculty of Medical Sciences, National University of Cuyo. Mendoza, Argentina.

Director of the Laboratory of Mast Cell Immunopharmacology and Bioactivity of Natural Products (IHEM-CONICET-UNCUYO).

Full Professor, Histology and Embryology Area, School of Medical Sciences, Universidad Nacional de Cuyo. Mendoza, Argentina.

Director of Research, Secretariat of Institutional Development, School of Medical Sciences, Universidad Nacional de Cuyo. Mendoza, Argentina.

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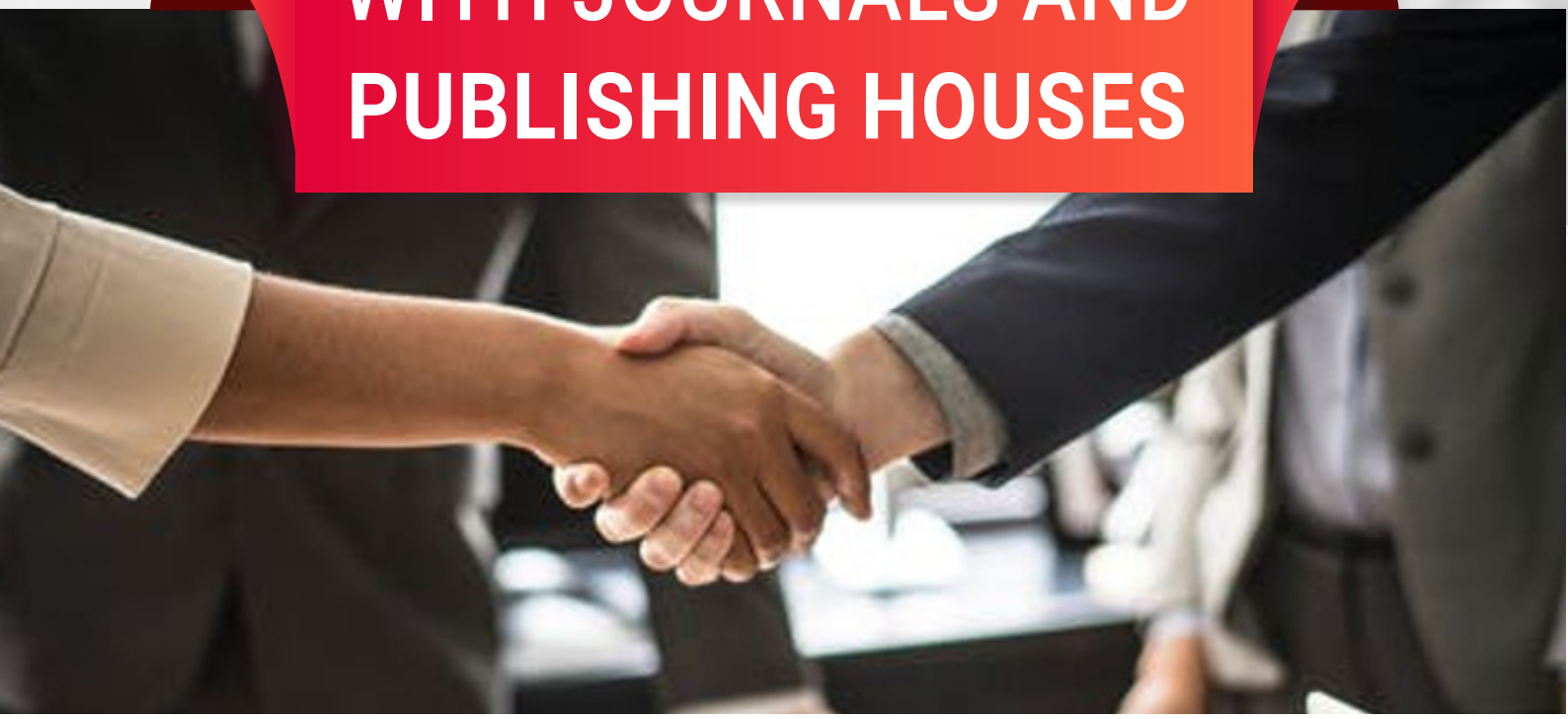

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