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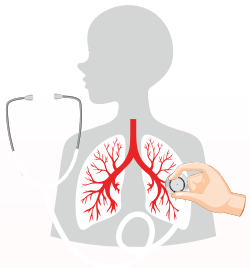

ICPRL 2026

INTERNATIONAL CONFERENCE ON ADVANCED PULMONOLOGY, RESPIRATORY MEDICINE & LUNG HEALTH

"Shaping the Future of Respiratory Health Through Innovation, Integration, and Global Insight"

June 25-27, 2026
Barcelona, Spain

Hotel Alimara
Carrer de Berruguete, 126,
Horta-Guinardó, 08035 Barcelona, Spain

International Conference on

ADVANCED PULMONOLOGY, RESPIRATORY MEDICINE & LUNG HEALTH

HYBRID EVENT

25-27 JUNE 2026

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Ranjan Ramasamy
ID-FISH Technology, United States

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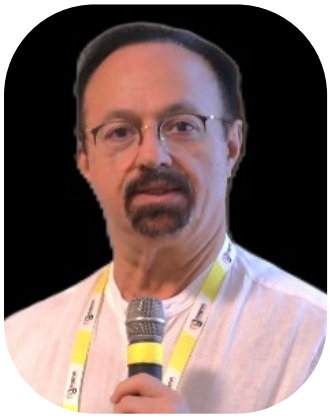
New York Medical College, United States

Saurabh Chattopadhyay
University of Kentucky, United States



Yazdan Mirzanejad
University of British Columbia, Canada

Pedro Plans Rubió
College of Physicians of Barcelona, Spain

Keynote Speakers

Sergey Suchkov

N.D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Russian Federation

Koustav Sarkar

SRM Institute of Science and Technology, India

Habil Bernd Blobel

University of Regensburg, Germany

Welcome Message

Prof. Dr. Yong-Xiao Wang

Albany Medical College, Albany, New York, USA

Dear Conference Attendees,

As the Conference Organizing Committee Member, the Session Chair, and the Keynote Speaker, it is my greatest pleasure to welcome you to attend the current "International Conference on Advanced Pulmonology, Respiratory Medicine & Lung Health".

This conference will bring together leading researchers, scientists, clinicians, and industry professionals from the pharmaceutical and drug delivery fields around the world to discuss the latest, energizing, and innovative cellular targeting, vaccine design, pharmaceutical microbiology, and nanotechnology, ensuring a comprehensive approach to understanding the challenges and innovations shaping the present and future of Pulmonology, Respiratory, and Lung Medicine and Health.

The current conference will include outstanding keynote sessions, plenary lectures, invited speeches, research presentations, technical demonstrations, and panel discussions around the world. One can expect that all these latest cutting-edge presentations and demonstrations will significantly advance almost all aspects from a complete overview of the current landscape and future possibilities to the scientific and regulatory aspects of the industry to unique interdisciplinary pharmaceuticals and drug delivery studies.

I am very excited to look forward to meeting with you at this fantastic upcoming conference.

Welcome Message

Pedro Plans Rubió

College of Physicians of Barcelona, Spain

Dear Conference Attendees,

It is my great pleasure to welcome you to the "International Conference on Advanced Pulmonology, Respiratory Medicine and Lung Health". This conference aims to cover a wide array of topics under the unifying theme of “Shaping the Future of Respiratory Health Through Innovation, Integration, and Global Insight,” such as chronic respiratory diseases, precision pulmonology, surgical interventions, environmental impacts on lung health, occupational lung diseases, critical lung care, respiratory therapy, pediatric pulmonology, and prevention and control of respiratory diseases. The program is designed to cover all topics and facilitate comprehensive discussions, networking, and the sharing of new research insights among professionals. It also facilitates global participation of clinicians, researchers, policy experts, and industry stakeholders. The conference sessions will provide a great opportunity for participants to gain knowledge from pioneering research and contribute to advancing the global respiratory health agenda.

Welcome Message

Sergey Suchkov MD, PhD

N.D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Russian Federation

Dear Colleagues, Partners, Scientists, Clinicians, Biodesigners and Bioengineers and Friends,

I look forward to welcoming you to "International Conference on Advanced Pulmonology, Respiratory Medicine & Lung Health" to be held in the ancient and historic, prestigious and poetic City of Barcelona.

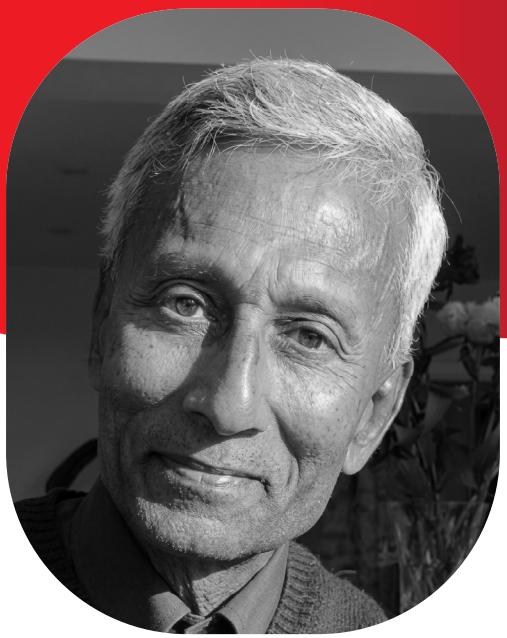
The Conference provides canonical pulmonologists, thoracic surgeons, otolaryngologists, advanced practice providers, respiratory therapists, nurses, trainees and bioindustry colleagues, as well as biodesigners and bioengineers, and profiled faculty and lecturers, with the opportunity to meet, discuss and learn about current trends and the latest technological developments, bioindustry breakthroughs and guidelines for thoracic diseases. The Conference will provide the ideal forum to stimulate ideas and establish collaborations as well as to initiate intense discussions. Extended networking opportunities will foster communications between delegates. The Event will play an integral part in facilitating progress by providing a platform for sharing cutting-edge research, collaboration, and networking among bioindustry leaders, experts, and visionaries from around the world.

Making progress in the field of personalized and precision pulmonology is thus one of the most significant global challenges of our time. Advances in fundamental, translational and clinical research and the availability of biomarkers are beginning to transform the clinical pulmonology to make it personalized and precision one, and healthcare landscape as a whole. Through discussions, debates, and demonstrations, we aim to shape the future of respiratory medicine together.

The core of the Event is its Scientific and Teaching Program. The sessions will highlight the latest clinical guidelines, groundbreaking research and biodesign-inspired translational innovations in advanced pulmonary practices, equipping attendees with the most up-to-date knowledge to improve patient outcomes. Workshop sessions are emphasized to open discussion between participants and lecturers, and immediate application of new knowledge. Students will participate in faculty-led exercises such as debates.

Personally I am convinced that the international partnership and collaboration will play a crucial promoting role for the jointly set projects from any points of view. We do hope that your interaction with your colleagues from many different countries will stimulate a creative exchange of ideas and will be personally rewarding.

Warmest and productive wishes and hope to meet and to see you soon in Barcelona!



Welcome Message

Ranjan Ramasamy

ID-FISH Technology, United States

Dear Participants,

I am pleased to welcome you to the "International Conference on Advanced Pulmonology, Respiratory Medicine & Lung Health" (ICPRL 2026), on June 25–27, 2026 in Barcelona, Spain. Respiratory illnesses are a leading cause of morbidity and mortality among non-communicable diseases in the world. Respiratory infections are highly prevalent and readily transmissible. The health, social and economic impacts of COVID-19 are fresh in our memory. Many exciting presentations in clinical, diagnostic and scientific aspects of respiratory health have been scheduled for presentation at this conference. The dual in-person and virtual participation at the conference enhances inclusivity and permits important contributions to be made by persons who are unable to travel to Barcelona. I wish you all to have an enjoyable and intellectually stimulating conference.

Welcome Message

Saurabh Chattopadhyay

University of Kentucky, United States

Dear ICPRL-2026 Attendees,

It is my pleasure to welcome you to the "International Conference on Advanced Pulmonology, Respiratory Medicine & Lung Health (ICPRL-2026)". Respiratory diseases remain a leading cause of morbidity and mortality worldwide, spanning acute infections, chronic lung conditions, and emerging environmental challenges. Advancing our understanding and management of these conditions requires close integration of basic science, clinical research, and patient-centered care. This conference brings together clinicians, researchers, and trainees to share recent advances, foster collaboration, and explore innovative approaches to improving respiratory health.

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About
Magnus Group

About

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

About ICPRL 2026

About

The **"International Conference on Advanced Pulmonology, Respiratory Medicine & Lung Health" (ICPRL 2026)** is scheduled to take place from **June 25–27, 2026,** in **Barcelona, Spain**, **and online** through a hybrid format that enables worldwide participation.

The conference will serve as a global platform for clinicians, researchers, academicians, healthcare professionals, and public health experts to exchange knowledge, share research findings, and discuss the latest developments in respiratory medicine and lung health. By bringing together experts from diverse disciplines, the event aims to encourage collaboration and inspire innovative approaches to addressing current and emerging respiratory health challenges.

Centered around the theme, **"Shaping the Future of Respiratory Health Through Innovation, Integration, and Global Insight," ICPRL 2026** will explore a broad range of topics including pulmonary diseases, diagnostic advancements, therapeutic interventions, respiratory care technologies, disease prevention strategies, and interdisciplinary research innovations. The scientific program will feature keynote presentations, panel discussions, case studies, oral presentations, and poster sessions designed to stimulate meaningful dialogue and professional engagement. Participants will gain valuable insights into both clinical practices and research methodologies while building international networks that contribute to the advancement of respiratory healthcare and improved patient outcomes across the globe.

About
CPD Accreditation

About

Continuing Professional Development (CPD) credits are valuable for **ICPRL 2026** attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail **1 CPD credit for each hour of Attendance.**

Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending **ICPRL 2026** and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: This conference provides opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborator.

International Conference on

ADVANCED PULMONOLOGY, RESPIRATORY MEDICINE & LUNG HEALTH

HYBRID EVENT

25-27 JUNE 2026

KEYNOTE PRESENTATIONS

Prof. Dr. Habil Bernd Blobel FACMI, FACHI, FHL7, FEFMI, FIAHSI

University of Regensburg, Medical Faculty, Regensburg, Germany
Charles University Prague, First Medical Faculty, Prague, Czech Republic
Faculty European Campus Rottal-Inn, Deggendorf Institute of Technology, Deggendorf, Germany
University of Genoa, DIBRIS, Genoa, Italy

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

The representational challenge for designing and managing intelligent and ethical 5P medicine pulmonary, respiratory and lung health care systems

Health and social care systems around the world undergo a transformation towards personalized, preventive, predictive, participative Precision Medicine (5PM), considering the individual health status, conditions, genetic and genomic dispositions in personal, social, occupational, environmental and behavioral context. This evolution happens in any medical domain including pulmonary, respiratory and lung health care systems. For enabling communication and cooperation between actors from different domains using different methodologies, languages and ontologies based on different education, experiences, etc., we have to advance design and management of the resulting complex and highly dynamic ecosystem from data to knowledge level. The aforementioned transformation is strongly

supported by technologies such as micro-and nanotechnologies, advanced computing, artificial intelligence, edge computing, etc. Beside their opportunities, those advanced technologies also bear risks to be managed. Beside the relationships between technology and human actors, the behavior of intelligent and autonomous systems must be considered from a humanistic, moral and ethical perspective. The challenge is the consistent, correct and formalized representation of the transformed health ecosystem from the perspectives of all domains involved including the legal and ethical ones, representing and managing them based on related ontologies. The resulting business view of the real-world ecosystem must be interrelated using the ISO/IEC 21838 Top Level Ontologies standard. Thereafter, the outcome can be transformed into implementable solutions. The different viewpoint are represented using viewpoint-specific ICT ontologies. The necessary model and framework has been developed by the author and meanwhile standardized as ISO 23903 Interoperability and Integration Reference Architecture. The formal representation of any ecosystem and its development process including examples of practical deployment of the approach are presented in detail. This includes correct systems and standards integration and interoperability solutions.

Koustav Sarkar[1*], Geetha Shanmugam[1], Sudeshna Rakshit[1], Pradeep R[1], Melvin George[2]

[1]Department of Biotechnology, SRM Institute of Science and Technology, Kattankulathur, Chennai, Tamil Nadu 603203, India

[2]Department Clinical Pharmacology, SRM Medical College Hospital and Research Centre, Kattankulathur, Chennai, Tamil Nadu 603203, India

Biography: Dr. Koustav Sarkar is a Research Associate Professor in Biotechnology at SRM Institute of Science and Technology, Kattankulathur, Chennai, India having earned his PhD at age 28 from Chittaranjan National Cancer Institute/Jadavpur University, Kolkata, India. With 24 years of research experience including a PhD and three postdocs from different universities of USA, he has published 89 high-impact papers and presented at over 100 conferences. His key contributions include isolating immunomodulatory neem leaf glycoprotein with cancer-preventive functions (patent #259434, granted 2014) and discovering WASp's novel nuclear role in Th1 differentiation via epigenetic regulation of the T-BET promoter. He currently studies epigenetic mechanisms in lung cancer T helper cells associated with COPD.

From Chronic Obstructive Pulmonary Disease (COPD) to Non-Small Cell Lung Cancer (NSCLC): T Helper (Th) cell epigenetic modifications and cancer risk

Chronic Obstructive Pulmonary Disease (COPD) and lung cancer are the major reasons for lung disease related mortality worldwide. Chronic inflammation is a key attribute of COPD and a potential driver of lung carcinogenesis. Among various environmental risk factors, cigarette smoke plays a crucial role in the development and progression of COPD and lung cancer. Several epidemiological studies show that COPD patients are at a greater risk of developing lung cancer independently of cigarette smoking which suggests the role of genetic predisposition in the disease development. Uncovering the mechanistic link between these two diseases is hampered due to their heterogeneous nature: Each is characterized by several sub-phenotypes of diseases. Our laboratory is mainly focussed to study the specific epigenetic mechanism that occur in both COPD and lung cancer. The purpose of the current study is to uncover the link between alterations in inflammatory cytokine levels and disease progression in CD4+T cells of patients suffering from COPD and lung cancer. We also investigated the epigenetic regulation of mitochondrial Transcriptional Factor A (mtTFA) to delineate the role of oxidative stress-mediated inflammation in Lung cancer and COPD. The RT2 Profiler PCR array was used to examine the differential expression pattern

of inflammatory genes in CD4+ T helper (Th) cells from COPD, NSCLC, and control subjects. Candidate inflammatory gene loci were selected and the enrichment of transcriptional factor and histone modifiers was analysed using ChIP-qPCR. In comparison to control subjects, a set of genes (e.g., BMP2, CCL2, IL5, VEGFA, etc.) are over-expressed whereas another set of genes (e.g., AIMP1, IFNG, LTA, LTB, TNF, etc.) are under-expressed in both COPD and NSCLC patients. The increased percentage enrichment of inflammation-associated transcription factors including NF-kB, CREB, HIF1a, and MYC at the loci of inflammatory genes was revealed by our Chromatin Immunoprecipitation (ChIP) data. H3K4me3, H3K9me3, H3K14Ac, HDAC1, 2, 3, 6 all showed dysregulated enrichment at the VEGFA gene locus. One of the epigenetic modifications, histone methylation, was found to be abnormal in the mtTFA complex in COPD and NSCLC patients in comparison to controls. Although there is mounting evidence of several links between these disorders, therapeutic options remain inadequate. Our findings contribute to the body of knowledge about therapeutic techniques that use inflammatory cytokines as a prognostic marker and highlight the need for epigenetic therapy for these debilitating lung diseases.

Pedro Plans-Rubió

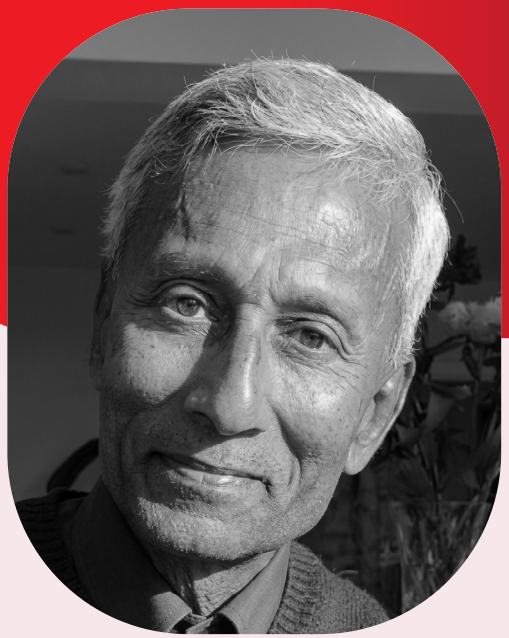
College of Physicians of Barcelona, Spain

Biography: Pedro Plans-Rubió was responsible for Health Registries, Public Health Agency of Catalonia, Barcelona, Spain. MD from the School of Medicine, University of Barcelona; PhD from the School of Medicine, University of Barcelona; MSc in Health Economics from the School of Economics, University of Barcelona. Specialist in Preventive Medicine and Public Health. Member of the Group of Prioritization of Treatments (GIP), Heath Emergency Preparedness and Response (HERA), European Commission. Member of the Non-communicable diseases risk factor Collaboration (NCD-RisC) research group. Editor-in Chief of Section "Vaccine Advancement, Efficacy and Safety" of journal Vaccines. Member of the Editorial Board of journal Pharmacoeconomics Open, Elsevier.

Syndromic surveillance of influenza based on sentinel pharmacies

Influenza is responsible for seasonal epidemics every winter, with great impact on the health system. Community pharmacies are involved in the prevention and control of influenza and other diseases. In Catalonia, Spain, a new influenza surveillance system based on 60 community sentinel pharmacies was implemented from 2017 to 2023. The results obtained with this surveillance system were assessed by analysis the number of Influenza-Like-Illness (ILI) cases, ILI symptoms, medications dispensed by pharmacies to ILI cases, medications prescribed by physicians to ILI cases, and influenza vaccine effectiveness among persons aged ≥65 years. Influenza/ILI activity was detected during each influenza season using the moving epidemic method. Influenza epidemics were detected in the 2017-2018, 2018-2019 and 2019-2020 influenza seasons, while they were absent in the 2020-2021 and 2021-2022 influenza seasons. The most frequent medications dispensed to ILI cases included paracetamol, cough medications, ibuprofen and antihistamines. Oseltamivir had been prescribed to <1% of ILI cases attended by pharmacies. 31–38% of ILI cases attended by pharmacies had received a prior medical visit during the influenza seasons studied. Dispensation percentages of 94–98% were registered during the influenza seasons studied. Physicians had prescribed medications to 31–38% of ILI cases during the influenza seasons studied. The effectiveness of influenza vaccination in persons aged ≥65 years during the last two seasons assessed (2021-2023) was 76% (95% IC: 37.5–90.8%) among persons

with a negative test and 75.4% (95% IC: 49.9–87.9%) among all ILI cases. The analysis of the information collected by the surveillance system based on pharmacies showed that this new surveillance system was able to detect the influenza epidemic and provide complementary information complementary of that obtained using traditional influenza surveillance systems.



Ranjan Ramasamy

ID-FISH Technology, 556 Gibraltar Drive, Milpitas, CA 95035, USA

Biography: Ranjan Ramasamy obtained a BA and PhD from the University of Cambridge, UK. He has held academic appointments in the UK and abroad including Australia, Sri Lanka and the USA. Ranjan was the Chairman of the National Science Foundation of Sri Lanka, and held Professorial appointments in Biochemistry, Immunology and Life Sciences. Ranjan was a member of the Board of Governors of the International Centre for Genetic Engineering and Biotechnology (ICGEB), and a member of Committee for Scientific Planning and Review (CSPR) of the International Council for Science (ICSU) for several years. Ranjan has 300 publications pertaining to Biochemistry, Immunology and Infectious Diseases.

Changing population immunity to COVID-19 in the context of infection, vaccination and emerging SARS-CoV-2 variants

The changing state of protective immunity to COVID-19 in the global population during the six and a half years since COVID-19's origin in 2019 is analysed in the context of the (i) Circulation of SARS-CoV-2 in the population, (ii) Widespread use of different types of COVID-19 vaccines beginning in December 2020 and continuing to the present time, and (iii) Ongoing evolution of SARS-CoV-2 to produce mutant viruses with greater infectivity, replication rate, evasion of immunity and transmissibility. The outlook, and possible vaccine strategies, for the future control of COVID-19 are also examined. The continuing generation of new SARS-CoV-2 variants, and the rapid global spread of the more fit variants, also highlights the need to continue the worldwide effort to sequence viral genomes and determine virological characteristics of the variants. Appropriate monitoring of emerging SARS-CoV-2 variants in animals also seems essential.

Ramasamy, R. perspective overview of changing population immunity to COVID-19 in the context of infection, vaccination, and emerging SARS-CoV-2 variants. Pathogens 2025, 14, 1197.

Saurabh Chattopadhyay

University of Kentucky, United States

Biography: Saurabh Chattopadhyay Ph.D., is an Associate Professor in the Department of Microbiology, Immunology, and Molecular Genetics at the University of Kentucky College of Medicine. Chattopadhyay's research investigates how viral pathogens interface with innate immune signaling pathways, with a particular focus on interferon-regulated mechanisms that shape antiviral defense and inflammatory responses. Chattopadhyay laboratory has been funded by the National Institutes of Health, the Ohio Department of Health, the Centers for Disease Control and Prevention, and the American Heart Association. Dr. Chattopadhyay earned his doctoral degree in Biotechnology from the Indian Institute of Technology Delhi and completed postdoctoral training in Virology at the Cleveland Clinic. Before joining the University of Kentucky, Chattopadhyay was a faculty member at the University of Toledo College of Medicine.

Non-canonical Interferon Regulatory Factor 3 (IRF3) functions in limiting pulmonary inflammation

The Interferon (IFN) system is a cornerstone of host defense against viral infection, coordinating antiviral immunity while simultaneously shaping inflammatory responses. Although inflammation is required for effective viral control, excessive cytokine production underlies much of the tissue injury, respiratory failure, and mortality observed in severe viral diseases. Our work seeks to define regulatory nodes within the IFN signaling network that uncouple antiviral protection from pathological inflammation. Using primary human and murine cells together with clinically relevant mouse models of respiratory viral infection, we have identified host-intrinsic pathways that selectively restrain cytokine amplification without impairing antiviral immunity. These findings reveal tractable mechanisms that may be therapeutically leveraged to limit cytokine-driven immunopathology and improve outcomes in acute respiratory viral infections.

Sergey Suchkov[1-14*], Holland Cheng[15], David Smith[16]

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[2]China Hong Kong Innovation International Business Association, Hong Kong

[3]InMedStar, Russia

[4]New York Academy of Sciences, USA

[5]EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU, Belgium

[6]ISPM (International Society for Personalized Medicine), Tokyo, Japan

[7]PMC (Personalized Medicine Coalition), Washington, DC, USA

[8]AMEE (Association for Medical Education in Europe), Centre for Medical Education, Dundee, Scotland

[9]ACS (American Chemical Society), Washington, DC, USA

[10]AHA (American Heart Association), Dallas, TX, USA

[11]ARVO (The Association in Research in Vision & Ophthalmology), Rockville, MD, USA

[12]ISER (International Society for Eye Research), Anchorage, AK, USA

[13]Secretary General, United Cultural Convention (UCC), Cambridge, UK

[14]The Russian Academy of Natural Sciences, Moscow, Russia

[15]The College of Biological Sciences, UC Davis, CA, USA

[16]Mayo Clinic, Rochester, MN, USA

Biography: Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and was awarded with MD. In 1985, Suchkov maintained his PhD as a PhD student of the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology. In 2001, Suchkov maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, Dr. Suchkov was being a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004-a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, Dr. Suchkov was a Secretary-in-Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At present, Dr. Sergey Suchkov, MD, PhD, is: Director for Center of Biodesign of N.D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Moscow, Russia. Senior Scientific Advisor of China Hong Kong Innovation International Business Association, Hong Kong. R&D Director of InMedStar, Russia. Member of the: Russian Academy of Natural Sciences, Moscow, Russia. New York Academy of Sciences, USA. American Chemical Society (ACS), USA. American Heart Association (AHA), USA. European Association for Medical Education (AMEE), Dundee, UK. EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU. ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research). Personalized Medicine Coalition (PMC), Washington, DC, USA.

Personalized and Precision Medicine (PPM) as a unique healthcare model through biodesign-driven and inspired biotech, translational applications and pulmonology-related marketing to secure the human healthcare, wellness and biosafety

A new systems approach to diseased states and wellness result in a new branch in the healthcare services, namely, Personalized and Precision Medicine (PPM). To achieve the implementation of PPM concept, it is necessary to create a fundamentally new strategy based upon the recognition of biomarkers and thus biomarker-driven targeting to secure the grand future of drug discovery to monitor and to control pulmonary disorders.

Recent advancements in understanding respiratory diseases have paved the way for PPM-guided clinical practice and treatments, considering individual genetic, molecular and environmental factors. Innovative technologies, including NGS sequencing and biomarker identification and screening contribute to this approach, allowing for customized treatments and the identification of effective personalized therapies. Additionally, the application of PPM-driven approaches in lung cancer treatment exemplifies the forefront of individualized care within respiratory medicine. In this context, the need for innovative lung disease treatments has become critical since the diseases remain the world's biggest killer. The pace of innovation in Personalized & Precision Pulmonology (PPP) is becoming fast. This approach, in which each patient or pre-illness person-at-risk receive the most appropriate treatment according to their characteristics (biological, genetic, environmental), optimizing the benefit and minimizing side effects, has been confirmed as a key strategy that will undoubtedly shift our daily care pathways towards PPM.

For instance, Chronic Obstructive Pulmonary Disease (COPD) heterogeneity has hampered progress in developing pharmacotherapies that affect disease progression, and should be deeply studies for understanding an individual's disease risk, and tailoring management based on pathobiology, environmental exposures, and psychosocial issues. OMICS technologies and network analytic techniques have started to dissect COPD heterogeneity and identify patients with specific pathobiology and pre-illness persons-at-risk. These approaches show great promise for risk stratification, pre-early (subclinical) intervention, drug repurposing, and developing novel therapeutic approaches for COPD. COPD complexity necessitates PPM-driven approaches for precise diagnosis, prognosis, and treatment to facilitate pre-early identification of those who will develop severe disease and experience loss of lung function, exacerbations, emphysema progression, and significant morbidity and mortality.

The role of PPM and PPP in asthma is to determine endophenotypes through specific biomarkers and to provide specific targeted therapy for achieving personalized treatment in each patient and prevention in pre-illness persons-at-risk. The application of PPM and PPP not only provides precise diagnosis and treatment but also enables pre-early (subclinical) detection in individuals at risk and prevention of progression and exacerbation in asthma. By leveraging cutting-edge technologies and embracing a multidisciplinary approach, clinicians and researchers are poised to make significant strides in improving respiratory health out-comes.

Additionally, compared with the gut microbiome, however, the density and diversity of the lung microbiome are limited. The formation and diversity of the Pulmonary Microbiome (PM) start with the exposure of newborn oral mucosa to maternal vaginal flora with subsequent microaspiration of the newly formed oral flora into the airways and alveolar epithelial cells. The latter means that advancements in non-culture-based microorganisms detecting methods would have to show that the lung has its dynamic microbiome that interacts with the host through symbiosis and causes pneumonia through dysbiosis. This concept will open the door for PPM-guided approaches in the diagnosis and treatment of pneumonia and interstitial lung diseases.

Moreover, the latest innovations, including confocal laser endomicroscopy and molecular imaging deliver visibility into cellular activity that enables physicians to assess areas of concern in cases where conventional pulmonary diseases (including lung cancers) screening returns ambiguous results. The unique ability to see cells in real time allows physicians to classify areas of interest or concern with confidence.

PPM will need to demonstrate that phenotype-based person-specific interventions are superior to the current standard of care and, ultimately, have a population effect by moving the mean on the disease spectrum towards Health. Education, Affordability, and Public Acceptance of the strategy all play key roles in its ultimate implementation. This is the reason for developing global scientific, clinical, social, and educational projects in the area of PPM-based and PPP-guided clinical practice to elicit the content of the new branch.

The era of PPM and PPP has brought forth a transformative approach to healthcare, including the field of respiratory medicine. By tailoring treatment strategies to individual patients based on their unique characteristics, precision medicine offers the potential to revolutionize the diagnosis, management, and prevention of respiratory diseases. Meanwhile, infrastructure, financial, regulatory, and ethical challenges remain to be overcome for the implementation of PPM in clinical pulmonary practice. Overcoming such barriers and moving from a one-size fits all approach to patient-centered care could improve patient quality of life and survival substantially. We do hope that the PPM-guided proposals would ideally be suited for practitioners who already incorporate integrative approaches in their practice, as well as more traditional clinicians who want to learn more about PPP as a growing area.

Yazdan Mirzanejad

University of British Columbia, Canada

Biography: Dr. Yazdan Mirzanejad is a highly respected Infectious Diseases specialist with formal certification in Tropical Medicine, and a Clinical Professor in the Division of Infectious Diseases at the University of British Columbia (UBC). He currently leads Undergraduate Medical Education at UBC's Surrey Campus and holds an adjunct faculty appointment with the Simon Fraser University (SFU) Medical School. Dr. Mirzanejad also serves as Co-Site Director of the CDC-GeoSentinel Global Surveillance Network (Vancouver site), a prestigious international initiative monitoring emerging and travel-related infectious diseases. Over the course of his distinguished career, he has authored and contributed to more than 50 peer-reviewed publications, advancing knowledge in the diagnosis, management, and prevention of infectious and tropical diseases. Renowned for his academic leadership, clinical expertise, and global health perspective, Dr. Mirzanejad has been a driving force in shaping the education of future physicians and in promoting excellence in infectious diseases care. His work has had a significant impact on public health policy, clinical training, and research both nationally and internationally. As a frequent keynote speaker and contributor at international conferences, he continues to influence the evolving landscape of infectious diseases through research, collaboration, and education. Dr. Mirzanejad practice and teaches in Surrey, Fraser Health, located in the South of Vancouver, British Columbia.

Missed, mistaken, but treatable: Refractory Mycobacterium avium complex (MAC) infection revealing anti-interferon-γ autoantibody (anti-IFN-γ AAbs)-mediated immunodeficiency

Neutralizing anti–Interferon-Gamma Autoantibodies (anti–IFN-γ AAbs) are an underrecognized cause of adult-onset immunodeficiency associated with disseminated Nontuberculous Mycobacterial (NTM) infections and frequent diagnostic delay. A 45-year-old woman with systemic lupus erythematosus presented with recurrent dyspnea, fever, and pleuritic chest pain unresponsive to multiple courses of antibiotics and corticosteroids. Imaging demonstrated persistent left lower lobe consolidation, and bronchoscopy confirmed *Mycobacterium Avium* Complex (MAC). Standard triple therapy was initiated but modified due to a rifampin-induced rash. Given ongoing refractory disease, further immunologic evaluation identified anti–IFN-γ AAbs. Rituximab was initiated and well tolerated. At four months, the patient demonstrated marked clinical and radiographic improvement without further hospitalizations. Anti–IFN-γ AAbs disrupt the IL-12/IFN-γ axis, impairing macrophage activation and intracellular pathogen clearance, thereby driving persistent NTM infection.

This entity should be considered in patients with unexplained or treatment-refractory NTM disease. Early recognition is critical, as targeted immunomodulatory therapy can significantly alter clinical outcomes.

Yong-Xiao Wang

Department of Molecular and Cellular Physiology, Albany Medical College, Albany, New York, USA

Biography: Dr. Yong-Xiao Wang has been a Full Professor in Department of Molecular and Cellular Physiology at Albany Medical College since 2006. Dr. Wang obtained his MD, PhD, and postdoctoral training at various week-recognized universities. Wang has made many important findings using complementary molecular, biochemical, physiological, and genetic approaches at the molecular, organelle, cellular, tissue and organism levels in animals and human samples, had numerous publications in Nature Commun (impact factor: 14.290), Antioxid Redox Signal (8.209), Proc Natl Acad Sci USA (9.432), Nature (34.480), Circ Res (9.214), and other highly peer-reviewed journals and academic books, and served as the editorial board member and/or section editor as well as the executive committee member and/or subcommittee chair for professional societies.

New mechanisms and innovative therapeutics for Pulmonary Hypertension (PH)

Pulmonary Hypertension (PH) is a common and serious lung disease, molecular mechanisms remain poorly understanded, and medications are neither always effective nor specific. In a series of our current studies, we have explored the potential important role of Ryanodine Receptor 2 (RyR2) Ca^{2+} release channel in the development of PH. Moreover, we have also investigated whether its inhibitory blockers and biologics may block this devastating disease. Our findings reveal that Rieske Iron-Sulfur Protein (RISP) serves as a primary molecule to increase mitochondrial Reactive Oxygen Species (ROS) generation, disassociate FKBP12.6 from RyR2, enhance the channel activity, and then induces calcium release from the sarcoplasmic reticulum (a major intracellular Ca^{2+} store), hereby causing PASMC proliferation, PA vasoconstriction and remodeling, and ultimately PH. Moreover, the increased RISP-dependent ROS can also cause DNA damage to activate Ataxia Telangiectasia Mutated (ATM) kinase, PASMC proliferation, and further PA remodeling and PH. Taken together, our results demonstrate that RISP, FKBP12.6, RyR2, and ATM work as a successive signaling pathway to mediate PH. Furthermore, specific inhibitory blockers and biologics of the molecules as described here may become innovative and effective treatment options for PH and other relevant vascular diseases.

Tzivia Elias[1], Adina Kagan[1], Summer Rotering[1], Shira Nahon[2], Shalva Goldenhers[3], Zvi G. Loewy[1,4*]

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[2]Touro University College of Dental Medicine, United States
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[4]School of Medicine, New York Medical College, United States

Biography: Dr. Zvi Loewy is a senior academic leader and an experienced global pharmaceutical–biotechnology executive. He leverages a diversified background in big-pharma senior management, biotech startup creation and academia. Dr. Loewy has served as a board member of the New Jersey Bioscience Center Incubator since 2010. Dr. Loewy's international experience has included leading international research teams, championing the penetration and commercial launch of healthcare products world-wide, and leading open innovation in the Mid-East. Dr. Loewy received his PhD in Molecular Biology from the Albert Einstein College of Medicine. Dr. Loewy has over 25 issued patents.

Innovative approaches to impede the pathogens implicated in Chronic Obstructive Pulmonary Disease (COPD) exacerbation

Antimicrobial resistance is a significant global health issue. The prevalence and spread of antimicrobial-resistant organisms has been identified by the World Health Organization as one of the major healthcare challenges. Biofilms, communities of microorganisms largely resistant to antibiotics compound the antimicrobial-resistant challenge. Exacerbation of Chronic Obstructive Pulmonary Disease (COPD) is manifested by microbial infection. The objective of our research is to identify natural compounds that have antimicrobial activity and potential to mitigate COPD exacerbation. Several approaches using natural actives, bacteriocins, derived from commensal bacteria as well as actives isolated from plants show promise. We demonstrate eradication of respiratory biofilms and correspondingly enhanced efficacy of antibiotics on respiratory pathogens.

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ORAL PRESENTATIONS

Aghapy Yermans Yakoup
Zewail City of Science and Technology, Egypt

The synergistic effect of using bacteriophages and chitosan nanoparticles against pathogenic bacteria as a novel therapeutic approach

Public health and environmental security are seriously at risk due to the growing contamination of pathogenic microorganisms. Therefore, effective antimicrobials are urgently needed. In our study, the antimicrobial effects of three types of nanoparticles were investigated with phage. The biosynthesis of nanoparticles was confirmed based on the color change and shapes, which tended to be mono-dispersed with a spherical shape with a size range of 20–35 nm for Ag-CS-NPs; 15–30 nm for Phage-CS-NPs (Ph-CS-NPs); and 5–35 nm for Propolis-CS-NPs (Pro-CS-NPs). Nanoparticles displayed peaks between 380-420 nm, 335–380 nm, and below 335 nm for Ag-CS- NPs, Pro-CS-NPs, and Ph-CS NPs, respectively. Throughout the three synthesized nanoparticles, Ag-Cs-NPs represented a higher antibacterial effect in combination with phages. It showed MIC against *S. sciuri, S. Typhimurium*, and *P. aeruginosa* between 31.2 and 62.2 µg/mL and MBC at 500, 62.5, and 31.2 µg/mL, respectively, while in combination with phages showed MIC at 62.2, 31.2, and 15.6 µg/mL, respectively and MBC at 125, 62.2, and 15.6 µg/mL, respectively. Furthermore, a significant killing efficiency was observed with 16.5–30.1 µg/mL of Ag-CS NPs combined with phages. In conclusion, Ag-CS-NPs with phages present potential bactericidal and inhibitory effects against gram-positive and gram-negative bacteria, as well as against the production of biofilms.

Biography

Aghapy Yermans Yakoup is a graduate, batch 2023, with a Biomedical Sciences Major (BMS) (medical sciences concentration) from Zewail City for Science, Technology, and Innovation. In addition, Aghapy has worked as a junior Researcher Assistant (jRA) in the Center for Microbiology and Phage Therapy (CMP) in Zewail City for Science, Technology, and Innovation from Fall 2021 until Summer 2023. Aghapy is currently working as an R&D specialist in Pharmaplast company. Aghapy is interested in finding new solutions to get rid of multi-drug-resistant bacteria and inventing new compounds that can be alternatives to antibiotics. Also, Aghapy is interested in the medical microbiology field. In the future, he planning to enroll in a Ph.D. program that aims to find new applicable solutions for infectious diseases in different body systems like the nervous system and cardiovascular system.

Dr. A. Mrudula Srinivasulu[1*], Dr. Afroze Sultana[2], P. Mahesh[3], S. Lakshmi Madhuri[3], Md. Amir Jaffer[3], G. Raju[3], G. Tirumala[3], Ramana[3], G. Bhanu Prasad[3]

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Emerging burden of Non-Tuberculous Mycobacteria (NTM) in MGIT-based tuberculosis cultures: Insights from South India

Background: Non-Tuberculous Mycobacteria (NTM) are increasingly recognized as clinically significant pathogens that can mimic *Mycobacterium Tuberculosis* (MTB) in both clinical presentation and laboratory features. Because of intrinsic drug resistance and overlapping morphology, distinguishing them from MTB remains a challenge in diagnostic laboratories. This study aimed to determine the incidence and distribution of NTM among culture-positive mycobacterial samples processed at a tertiary-level diagnostic centre in South India.

Methods: A retrospective cross-sectional analysis was conducted at Yoda Diagnostics, Hyderabad, covering the period from 16 May 2023 to 27 October 2025. A total of 932 clinical specimens received for mycobacterial culture were examined. Smear microscopy was performed using Ziehl–Neelsen staining, and cultures were processed in the BacT Alert MGIT 960 system. All culture-positive isolates were screened with the MPT-64 antigen rapid test to differentiate the MTB complex from NTM. Line Probe Assay (LPA) was used for NTM species identification, and drug-susceptibility testing was performed. De-identified data were compiled and analysed descriptively.

Results: Of the 932 processed specimens, 143 (15.3%) yielded culture-positive isolates. The highest culture yield was obtained from broncho-alveolar lavage (69/287, 24%), followed by pus (31/103, 30%) and sputum (23/58, 40%). Among these, 91 (63.6%) were identified as MTB, 49 (34.3%) as NTM, and 3 (2.1%) showed mixed MTB+NTM growth. Pulmonary specimens-

particularly BAL and sputum-accounted for nearly two-thirds of all NTM isolates (33/49, 67%), indicating pulmonary predominance. Extra-pulmonary NTM were infrequent, found mainly in tissue (3 cases) and lymphnode aspirates (4 cases). The male-to-female ratio favoured males (~1.5:1). A progressive increase in both MTB and NTM isolations was observed over the study period.

Conclusion: This study demonstrates a notable and rising incidence of NTM infections among culture-positive mycobacterial samples in southern India. Differentiating NTM from MTB is essential for accurate diagnosis and management. Integrating rapid antigen screening and molecular species identification into routine workflows enhances laboratory precision and patient care. Continued regional surveillance is warranted to monitor emerging NTM species and evolving resistance patterns.

Keywords: Non-Tuberculous Mycobacteria (NTM), *Mycobacterium Tuberculosis* (MTB), MPT-64 Antigen Test, Line Probe Assay (LPA), MGIT Culture, Hyderabad.

Biography

Dr. A. Mrudula Srinivasulu is a Consultant Microbiologist specializing in Molecular Diagnostics in Infectious Diseases at Yoda Diagnostics, Hyderabad, India. She holds a PDCC in Transplant Virology from the Institute of Liver and Biliary Sciences (ILBS), New Delhi. Her areas of interest include mycobacterial disease diagnostics, antimicrobial resistance, and transplant virology. She has contributed to multiple research projects and scientific presentations in national and international forums, focusing on MGIT-based diagnostics and emerging NTM pathogens in high-burden regions.

Dr. Anitha Subbappa

Reader, Department of Periodontology, JSS Dental College & Hospital, JSSAHER, Mysuru, Karnataka, India

Oral–pulmonary axis: Evaluating the role of periodontal treatment in Chronic Obstructive Pulmonary Disease (COPD) management

Background: Periodontitis, a chronic inflammatory disease caused by complex interactions between host immune responses, bacterial infections, and environmental factors such as smoking, has been associated with various systemic diseases, including Chronic Obstructive Pulmonary Disease (COPD).

Materials and Method: This prospective cohort study investigates the interplay between periodontitis severity and the frequency and severity of COPD exacerbations. A total of 199 COPD patients were enrolled and participants with moderate COPD with 50 participants receiving comprehensive periodontal therapy and 25 receiving standard dental hygiene practices. The study measured periodontal health parameters and Acute exacerbations of COPD over a 12-month period.

Results: Indicate that comprehensive periodontal therapy significantly improves periodontal health, reduces systemic inflammation, and potentially lowers COPD exacerbation frequency. This research emphasizes the importance of periodontal management as part of a multidisciplinary approach to improve the quality of life and clinical outcomes for COPD patients.

Biography

Dr. Anitha Subbappa is an accomplished periodontist, academician, and researcher with distinguished expertise in advanced periodontal therapies. She serves as Reader in the

Department of Periodontology at JSS Dental College & Hospital, Mysuru. Dr. Subbappa has authored numerous publications in peer-reviewed national and international journals and has successfully led multiple funded research projects. She also holds a patent, reflecting her commitment to innovation and translational research in dentistry. With a strong blend of clinical expertise, research excellence, and academic leadership, Dr. Subbappa brings valuable insight and global perspective to contemporary periodontal practice and research. She has also been a speaker for many National & International Dental Conferences, Diabetes Conferences.

Aylin Ozsancak Ugurlu, Muhammad Junaid Akram, Barea Tanveer*, Syed Abid, Juhi Jain, Kirstyanne Ebbage, Giselle Pereira, Rahul Mukherjee

Birmingham Heartlands Hospital, University Hospitals Birmingham NHS Foundation Trust, United Kingdom

Impact of comorbidity burden on acute Non-Invasive Ventilation (NIV) outcomes before and after the COVID-19 pandemic: A Charlson Comorbidity Index (CCI) based analysis

Background: Non-Invasive Ventilation (NIV) is widely used in acute hypercapnic respiratory failure across diverse populations. Comorbid conditions, as quantified by the Charlson Comorbidity Index (CCI), may influence NIV success and hospital outcomes. This study aims to evaluate patient characteristics, NIV outcomes, and the relationship between CCI and mortality in an acute NIV cohort before and after COVID-19.

Methods: We analysed prospectively collected quality data from adults receiving acute NIV at a tertiary centre respiratory support unit during two time periods: Pre- (04/2019-03/2020, n=171) and post- COVID (04/23-03/24, n=141). Demographic, clinical, and outcome data were compared between groups. Charlson Comorbidity Index (CCI) was analysed overall and within diagnostic subgroups using chi-square test for categorical variables and Kruskal-Wallis for the non-normally distributed parameters.

Results: Among 312 patients [median age 71 (IQR 61–77); 59.3% female], NIV success was 73.4% and in-hospital mortality 24%. The overall median CCI was 5.0 (3.0–6.0), with a significant increase of 4 (3-6) to 5 (4-7) between the two time periods (p=0.002). Higher CCI was significantly associated with NIV failure (p=0.007) and in-hospital mortality (p<0.001). In subgroup analyses, median CCI was higher in the 2nd cohort in COPD patients [5(4-7) vs. 4(3-5), p=0.005], with increased ward-based NIV as ceiling of care (83% vs. 66%, p=0.009). In thoracic cage disorders, patients in the 2nd cohort had lower median pH [7.23(7.19-7.26) vs. 7.30(7.26-7.33), p=0.05] and more frequent ward-based NIV as ceiling-of-care (88% vs. 0%, p=0.011), with trends toward

higher CCI and mortality [5.5(3.5–9.5) vs. 4 (2.5–4), and 50% vs. 0%, respectively, p>0.05 for both]. CCI did not differ significantly across diagnostic sub-groups overall (p=0.093).

Conclusions: Higher comorbidity burden, measured by CCI, is a strong predictor of NIV failure and in-hospital mortality. Early recognition of patients with elevated CCI enables risk stratification, guides ceiling-of-care decisions, and supports individualized management and resource allocation. These findings highlight the importance of integrating comorbidity assessment into acute respiratory care.

Biography

Dr. Barea Tanveer is currently working as an international training fellow in the department of Acute Medicine at Birmingham Heartlands Hospital, Birmingham, UK. Tanveer has completed her training in internal medicine in Pakistan. Tanveer has a keen interest in respiratory medicine and plans to pursue specialty training in it. Tanveer is looking forward to work from February 2026 in respiratory department as her last rotation of 2 year international training program.

Brahmchetna Bedi[1,2*], Zhihong Yuan[1,2], Myungsoo Joo[3], Susu M Zughaier[1,4], Joanna B Goldberg[5], Jack L Arbiser[1,6], C Michael Hart[1,2], Ruxana T Sadikot[7,2]

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The role of Peroxisome Proliferator-Activated Receptor Gamma (PPARγ) agonists in host defense

Pseudomonas aeruginosa is a major cause of multidrug-resistant infections, particularly in immunocompromised and hospitalized patients. Its pathogenicity is driven by Quorum Sensing (QS) molecules, such as N-(3-oxo-dodecanoyl)-L-Homoserine Lactone (3O-C12-HSL), which regulate virulence, promote biofilm formation, and impair host immune responses. Strategies that enhance host defense mechanisms may improve outcomes in resistant infections. Here, we demonstrate that activation of the nuclear hormone receptor Peroxisome Proliferator-Activated Receptor Gamma (PPARγ) enhances host defense against *P. aeruginosa* (PAO1). Treatment of macrophages with the PPARγ agonist pioglitazone significantly increased phagocytosis and bacterial clearance. Mechanistically, QS molecules suppressed PPARγ expression and function, in part through competitive receptor binding, and reduced expression of Paraoxonase-2 (PON-2), an enzyme that degrades QS molecules. Gene-silencing studies confirmed that PPARγ-mediated bacterial clearance depends on PON-2. In bronchial epithelial cells, PAO1 and 3O-C12-HSL disrupted epithelial barrier integrity by downregulating junctional proteins, including zonula occludens-1, occludin, and claudin-4. Pre-treatment with pioglitazone restored expression of these proteins, improved barrier function, and reduced bacterial permeation. Additionally, PPARγ activation inhibited biofilm formation on epithelial cells via a PON-2–dependent mechanism.

In vivo, PPARγ agonist treatment enhanced clearance of *P. aeruginosa* from the lungs of infected mice. Collectively, these findings identify a novel mechanism by which QS molecules impair host immunity through inhibition of PPARγ signaling. Activation of PPARγ restores immune function, preserves epithelial barrier integrity, and suppresses biofilm formation, highlighting PPARγ as a promising therapeutic target for resistant *P. aeruginosa* infections.

Biography

Brahmchetna Bedi Ph.D., MBA, is a senior scientist in the Division of Infectious Diseases at Emory University. Bedi is a basic scientist trained in immunology and biomarker research, with over 20 years of experience in hypothesis-driven basic, translational, and clinical research. Dr. Bedi has an extensive publication record and has developed robust in vitro and in vivo disease models. Bedi serves as the Laboratory Director of the Atlanta HUB for the NIH RECOVER study, a role she will continue in RECOVER 2.0.

Constantinos Mikelis

Department of Pharmacy, University of Patras, Greece
Jerry H. Hodge School of Pharmacy, Texas Tech University Health Sciences Center, Texas, USA

The role of Angiopoietin-2 (Ang2) on lymphangiogenesis and the tumor microenvironment

Lymphangiogenesis is an essential physiological process but also a determining factor in vascular-related pathological conditions. Angiopoietin-2 (Ang2) plays an important role in lymphatic vascular development and function and its upregulation has been reported in several vascular-related diseases, including cancer. Here, we show that Ang2-driven human dermal lymphatic endothelial cell migration depends on the small GTPase RhoA. We demonstrate that Ang2-induced migration is independent of the Tie receptors, but dependent on β1 integrin-mediated RhoA activation and we dissected the downstream signaling pathway. The Ang2-RhoA relationship was explored in vivo, where lymphatic endothelial RhoA deficiency blocked Ang2-induced lymphangiogenesis, highlighting RhoA as an important target for anti-lymphangiogenic treatments. To evaluate the role of tumor-derived Ang2 on tumor formation, we knocked down Ang2 expression in tumor cells with CRISPR-CAS editing and evaluated the impact of its deficiency on tumor cell functions, tumor growth and tumor microenvironment characteristics.

Biography

Dr. Mikelis is a Professor at the Department of Pharmacy at the University of Patras, in Greece and an Adjunct Faculty Member at the Jerry H. Hodge School of Pharmacy of Texas Tech University Health Sciences Center. Mikelis obtained his PhD from the University of Patras, was trained at the German Cancer Research Center (dkfz) in Germany and at the National Institutes of Health (NIH), in the US. Mikelis' current research program is focused on investigating the role of small GTPases on endothelial physiology.

Dr. Devi Sundar

Founder & Clinical Director, Tele-Therapies Ltd &
Mind Body Synergy CIC, United Kingdom

Ending the silent terror: Why emotional breathlessness must become a clinical standard by 2030

Emotional breathlessness, an interplay of psychological distress and physical breathlessness remains critically under-recognised determinant of health in Chronic Respiratory Disease (CRD). The recent Breath & Mind Survey (UK, October 2025) shows a clear public awareness gap in understanding of how anxiety, depression, and breathlessness are connected in CRD: Only 31% of UK adults know about this relationship, while 69% are unaware or poorly informed. This gap shows how systematic barriers in the current health care system is limited to physical rehabilitation with none to minimal psychosocial components in respiratory care pathways for CRD. Emotional breathlessness causes an individual to have a chronic cycle of anxiety, avoidance behaviours, dependence on nicotine, worsening of symptoms, and an increase in their use of health services. There is a significant burden associated with CRD because in the UK alone over 12 million people have CRD, of which onethird experience anxiety or depression; both lead to poorer overall health status, lower QoL, and the widening of health inequities. The economic effect of both respiratory and mental health conditions is also enormous, costing billions a year collectively.

This presentation argues emotional breathlessness will need to shift from its current status as an undocumented and subjective experience to being a defined clinical standard by the year 2030. This will require implementing four major initiatives across the whole-system level of care: (1) Routinely screening for mental health issues within respiratory care pathways; (2) Implementing Psychosocially Integrative Pulmonary Rehabilitation (PIPR); (3) Developing a trauma-informed workforce who understand cultural considerations; and (4) Producing nationally targeted educational campaigns in workplaces, educational institutions, and community settings.

By redefining emotional breathlessness as a clinical safety signal—akin to pain—it opens up opportunities for early identification, improved patient engagement, as well as enhancing clinical outcomes. This redesigned methodology would connect national healthcare strategy with integrated care priorities and facilitate the shifting of care delivery towards personcentred, equitable means.

Addressing emotional breathlessness is not only clinically relevant but it is also critical from a public health perspective. Understanding and including the mind-lung connection can result in decreased preventable morbidity, an increase in well-being, and long-term sustainability in healthcare delivery. The existence of this “silent terror” requires immediate and concerted efforts to redefine breathlessness as a biopsychosocial experience central to all aspects of respiratory care.

Biography

Dr. Devi Sundar is a Mind-Body Medicine Consultant, Clinical Director, Educator and Founder of the BreathThrive Programme with over 23 years' experience in the areas of respiratory rehabilitation, mental health and public health. Devi has a Doctorate in Psychology and a Master’s degree in Psychotherapy and Respiratory Practice. In addition Devi is a Certified Neuroscience Coach, Clinical Hypnotherapist, Ayurveda and Breathwork Specialist, who develops research evidence based mind-body interventions. As a Fellow of the Higher Education Academy (FHEA) Devi is able to deliver scalable, evidence based programmes that are aligned with the UN Sustainable Development Goals and that will improve holistic health, education and well-being.

Diwakar Sharma*, Rachana
Department of Biotechnology, Jaypee Institute of Information Technology, Noida, U.P., India

Backbone regulators of Non-Small Cell Lung Cancer (NSCLC): A hierarchical network dissection reveals translational control as a central oncogenic axis

Introduction: Non-Small Cell Lung Cancer (NSCLC) remains a biologically complex and therapeutically challenging disease, accounting for nearly 85% of lung cancer diagnoses worldwide. After decades of studying tumour systems biology, it has become increasingly evident that oncogenesis is not merely the consequence of isolated mutations, but of coordinated regulatory architectures. We therefore sought to define the systems-level backbone of NSCLC by reconstructing patient-derived transcriptomic networks and identifying deeply conserved regulatory nodes that sustain tumour homeostasis across molecular subtypes.

Materials and Methods: RNA-sequencing datasets from 512 primary NSCLC tumours (including lung adenocarcinoma and lung squamous cell carcinoma) and 108 matched normal lung tissues were analysed across TCGA and two independent validation cohorts. Differentially expressed genes (FDR<0.01, $|\log2FC| \geq 1.5$) were integrated with curated protein–protein interaction datasets to construct a high-stringency disease interactome. Network architecture was interrogated using eigenvector and betweenness centrality, k-core decomposition, and multilevel modularity refinement. Regulators were prioritised based on persistence across k-core layers, cross-cohort reproducibility, and survival concordance.

Results and Discussion: The reconstructed NSCLC interactome comprised 2,742 nodes interconnected by 18,936 edges and displayed a robust hierarchical scale-free topology with a dominant 3-core structure. While numerous high-degree hubs were observed, only 14 regulators demonstrated structural persistence across all hierarchical layers and maintained prognostic stability in independent cohorts.

Contrary to conventional expectations centred solely on canonical oncogenes, the conserved backbone was enriched for regulators of translational fidelity (EIF4G1, RPL23A), proteotoxic stress buffering (HSPD1, DNAJB11), metabolic coupling (IDH1, PHGDH), and RNA maturation (DDX21, NOP58). Elevated expression of this composite backbone signature was associated with significantly reduced overall survival (median OS 32.4 vs 58.7 months, $p<0.001$). Functional enrichment revealed coordinated reinforcement of ribosome biogenesis, mitochondrial metabolism, redox adaptation, and epithelial–mesenchymal plasticity.

Notably, network perturbation simulations demonstrated that removal of intermediate k-core integrators produced greater global instability than elimination of several classical high-degree hubs, underscoring the underestimated importance of architectural stabilisers in tumour persistence.

Conclusion: This systems-level dissection of NSCLC reveals a conserved regulatory backbone rooted in translational control, metabolic adaptability, and proteostasis rather than exclusively in canonical driver mutations. These findings argue for therapeutic strategies that disrupt tumour network integrity itself—particularly its stabilising cores—thereby shifting the paradigm from gene-centric targeting to architecture-informed intervention.

Biography

Dr. Diwakar Sharma is a biotechnology researcher specializing in cancer biology, with particular expertise in non-coding RNAs and their role in pediatric cancers. He completed his Ph.D. in Biotechnology from Jamia Millia Islamia University and has extensive experience in molecular oncology, exosome biology, and RNA-based biomarker discovery, gained through collaborative research at AIIMS, New Delhi. Currently serving as an Assistant Professor of Biotechnology at JIIT, Noida, he focuses on translational cancer research, tumor microenvironment studies, and mentoring young scientists while actively contributing to scientific publications and academic innovation.

Dr. Harun Demir*, Tugba Abacıgil (Medical physicist)
Konya City Hospital Radiation Oncology Clinic, Konya, Turkey

Clinical outcomes of Whole-Brain Radiotherapy (WBRT) in patients with Brain Metastases (BM) from lung adenocarcinoma in the modern radiotherapy era: A five-year experience

Objective: To evaluate the clinical outcomes of Whole-Brain Radiotherapy (WBRT) in patients with Brain Metastases (BM) from lung adenocarcinoma who were not suitable candidates for stereotactic radiotherapy.

Methods: The data of 53 patients who underwent WBRT between December 2021 and February 2026 were retrospectively analyzed. Clinical characteristics, systemic treatment modalities, and radiotherapy-related factors associated with overall survival were evaluated.

Results: The median age was 65 years (range, 44–90), and 71.7% of the patients were male. Prior to WBRT, the primary tumor was uncontrolled in 79.2% of patients, and uncontrolled extracranial disease was present in 62.3%. According to the Recursive Partitioning Analysis (RPA) classification, 69.8% of patients were classified as class II, and 71.7% had a Karnofsky Performance Status (KPS) of 80–100. The number of brain metastases was ≤5 in 35.8% of patients, while 43.4% had more than 10 metastases, and 60.4% of metastases were detected synchronously. Molecular analyses revealed EGFR mutations in 15.1%, KRAS mutations in 13.2%, and no driver mutation in 45.3% of patients. PD-L1 expression was negative in 32.1%, 1–50% in 17.0%, and >50% in 11.3% of patients. The median WBRT dose was 30 Gy (range, 8–30 Gy), and the median number of fractions was 10 (range, 1–10). As first-line systemic therapy, 58.5% of patients received platinum-based chemotherapy, while 13.2% received immunotherapy or targeted therapy. Acute toxicity was observed in 35.8% of patients, with

the most common events being grade 2 headache (15.1%) and nausea (7.5%).

The median follow-up after WBRT was 3 months (range, 1–31 months). Intracranial recurrence occurred in 28.3% of patients, and the most commonly used salvage treatment was stereotactic radiosurgery (46.7%). The median overall survival after WBRT was 3 months (95% CI: 0.63–5.37), and the median intracranial progression-free survival was 3 months (95% CI: 1.76–4.24). At the last follow-up, 69.8% of patients had died.

In univariate analyses, mutation status (p=0.010), type of first-line metastatic systemic therapy (p<0.001), radiotherapy dose (p=0.001), performance status (p<0.001), extracranial disease status (p<0.001), number of brain metastases (p=0.002), and advanced age (p=0.050) were significantly associated with overall survival. In multivariate analysis, poor performance status (KPS 60–70) (HR: 55.7; 95% CI: 3.46–896.2; p=0.005) and uncontrolled extracranial disease (HR: 7.93; 95% CI: 1.58–39.93; p=0.012) were independently associated with shorter survival.

Conclusion: Our findings indicate that WBRT is associated with limited survival in patients with brain metastases from lung adenocarcinoma who are not candidates for stereotactic radiotherapy; however, performance status and control of extracranial disease remain the key prognostic determinants.

Keywords: Lung Adenocarcinoma, Brain Metastasis, Whole-Brain Radiotherapy, Survival.

Table: Univariate and multivariate cox regression analysis of prognostic factors for overall survival.

Variable	Univariate Analysis			Multivariate Analysis		
	p	HR	%95 GA	p	HR	%95 GA
KPS (good PS 80–100 vs poor PS 60–70)	<0,001	62,29	3,01–1289,71	0,005	55,71	3,46–896,22
Extracranial disease (uncontrolled vs controlled/absent)	0,001	12,00	1,13–127,97	0,012	7,93	1,58–39,93
Number of brain metastases (>10 vs ≤10)	0,002	3,29	0,54–19,89	—	—	—
RT dose (≥30 Gy vs ≤20 Gy)	0,008	—	—	—	—	—
Mutation Status (EGFR/KRAS/negative)	0,010	—	—	—	—	—

Figure 1: Kaplan–meier curve for overall survival after WBRT.

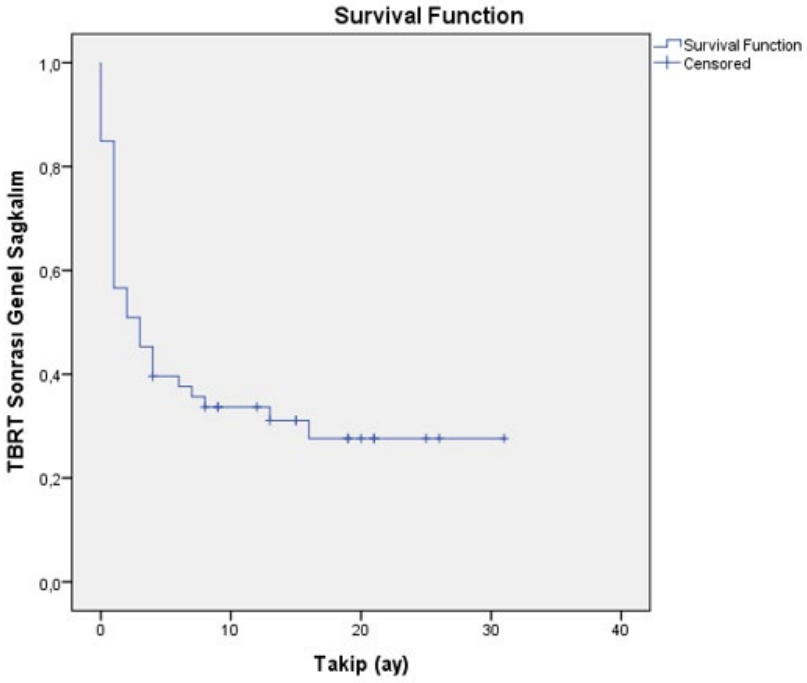
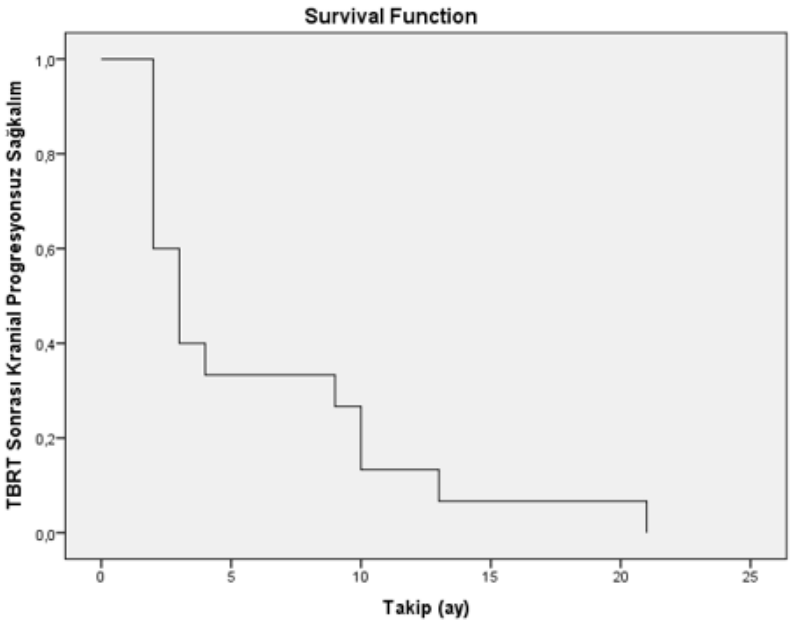


Figure 2: Kaplan–meier curve for cranial progression-free survival after WBRT.



Biography

Dr. Harun Demir was born in 1993 in Kırıkkale, Türkiye. He graduated from the Faculty of Medicine at Gazi University in 2017. He completed his residency in Radiation Oncology at Kartal Dr. Lütfi Kırdar City Hospital between 2018 and 2023 and currently works as a Radiation Oncologist at Konya City Hospital. His research interests focus on stereotactic radiotherapy, brain metastases, and geriatric oncology. Dr. Demir has authored several articles published in SCI/SCI-E indexed journals and has presented multiple oral presentations at national oncology congresses. He is a member of the Turkish Society for Radiation Oncology.

Ihssan Kdah[1*], Hassan Ait Benhassou[2], Salaheddine Redouane[3], Vincent Wellemans[4], Houda Houari[5], Remi Meunier[1], Richard Le Naour[1], Meriem Khyatti[5], Abdelilah Soussi-Gounni[7], Bouchaib Lamkhioued[1]

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Matrix Metalloproteinase-7 (MMP-7) restricts Respiratory Syncytial Virus (RSV) infection through cleavage of viral and host entry factors

Introduction & Aim: The airway epithelium constitutes the primary barrier against respiratory viral pathogens and actively shapes innate immune responses through the secretion of bioactive mediators. Among these, MMP-7 (matrilysin), a zinc-dependent endopeptidase constitutively produced by airway epithelial cells, has established roles in extracellular matrix remodeling and chemokine processing, yet its contribution to antiviral defense remains undefined. Here, we investigated whether airway epithelial-derived MMP-7 exerts direct antiviral activity against RSV and sought to elucidate its underlying molecular mechanisms.

Methods: The study used both in vitro and in vivo methods. Molecular docking analysis was conducted to examine the interactions between MMP-7 and RSV G glycoprotein. Human airway epithelial cells (A549 and Hep-2) were pre-treated with recombinant MMP-7 to determine viral infectivity (plaque assay and GFP based imaging) during and after

RSV infection. The ability of MMP-7 to interact specifically with CCR3 over CCR1, CCR5, and CX3CR1 was assessed by determining the effect on eosinophils binding to CCL11/eotaxin-1 and eosinophil chemotaxis. The direct proteolytic activity of MMP-7 on the RSV G glycoprotein was assessed by SDS-PAGE following incubation with various concentrations of MMP-7. Mice (wild type and MMP-7 deficient) were intranasally infected with RSV (10^6 pfu) and assessed on day 5 post-infection for pulmonary viral load, number of inflammatory cells in lungs, and mucus production.

Results & Discussion: Since Matrix Metalloproteinases (MMPs) degrade a broad range of substrates, chemokine receptors may represent previously unrecognized targets within the MMP degradome. Here, we identify MMP-7 as the principal enzyme mediating CCR3 processing, a chemokine receptor that regulates eosinophil and Th2 cell trafficking, while showing no activity toward CCR1, CCR5, or CX3CR1. Flow cytometry analyses further demonstrate that MMP-7 treatment of chemokine receptor–transfected cells reduce eotaxin binding to $CCR3^+$ cells, whereas MIP-1β binding to $CCR5^+$ cells remain unaffected. Consistently, MMP-7–mediated CCR3 cleavage results in a loss of eosinophil chemoattractant activity. Moreover, pre- treatment of airway epithelial cells with recombinant human MMP-7 inhibits Respiratory Syncytial Virus (RSV) infection in a dose-dependent manner. Structural modelling of MMP-7 and the RSV G protein identified stable interaction interfaces, while in vitro MMP-7–mediated proteolytic cleavage of RSV-G inhibited RSV infection of airway epithelial cells. The role of MMP-7 as a protective factor in RSV infection was confirmed by in vivo studies showing that MMP-7 deficient mice had a higher pulmonary viral burden than wild-type. MMP-7 deficient mice also showed greater inflammatory infiltrate as well as increased mucus hypersecretion and elevated PAS-positive goblet cells, further supporting the critical protective function of epithelial-derived MMP-7.

Conclusion: MMP-7 is a key regulator of airway inflammation and antiviral immunity. It decreases eosinophil chemotaxis by cleaving the CCR3 receptor, thereby reducing eosinophil driven inflammation. In parallel MMP-7 also acts directly on RSV-G attachment proteins, altering its binding to host receptors and consequently reducing viral infectious capacity. The combination of those functions results in a marked reduction in pulmonary inflammation and viral pathogenesis in mouse models of respiratory infection. Therefore, MMP-7 is a dual-action mediator of both immune regulation and antiviral defense and highlights its potential as a therapeutic target for respiratory viral diseases.

Keywords: RSV, G protein, CCR3, MMP-7 and Airway Epithelial Cells.

Biography

Ihssan Kdah is a PhD candidate in Immunology at the University of Reims Champagne-Ardenne, France. Ihssan holds a Master's degree in Human Pathology Biology, specializing in cancer sciences, from Mohammed V University in Rabat. Ihssan's research focuses on host–pathogen interactions in respiratory viral infections, with a particular emphasis on the role of Matrix Metalloproteinases (MMPs) in airway inflammation, tissue remodeling, and viral entry. Using in vivo and in vitro models of RSV and SARS-CoV-2 infection, Ihssan integrates

molecular biology, immunology, bioinformatics, and artificial intelligence approaches to uncover mechanisms of antiviral defense and identify potential therapeutic targets.

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Aspergillosis in diabetic patients: Causes, epidemiology, diagnostic challenges and management strategies

Diabetes is a chronic metabolic disease characterised by high blood sugar levels (HbA1c>6.5%), resulting from the body's in ability to produce or properly use insulin hormone which regulates blood glucose. It is characterized by 4 Ps-polyuria, polydipsia, polyphagia and polyneuropathy. It is an emerging disease growing at a fast rate of 46%. Globally, 589 million adults are living with diabetes which would reach 853 million by 2050.

Aspergillosis is an opportunistic fungal infection of lungs caused by *Aspergillus fumigatus. A. terreus* and *A. flavus. A. fumigatus* is the main causative agent worldwide. Aspergillus is an ascomycetous saprophytic large genus with over 180 species but fewer than 40 of them are known to cause Infections in humans. Aspergillus spp. are characterised by colonial morphology on SDA, uniseriate or biseriate arrangement of phialides on vesicle.

Pathogenesis occurs by inhaling airborne spores which are ubiquitous widely prevalent in the external and internal environments (indoors & outdoors), soil, compost, dead and decaying vegetation, phylloplane, building materials, household dusts and stored foods due to enormous conidial production. The symptoms range from mild, asthma- like reactions to invasive infections of lungs resulting from fever, fatigue, breathlessness, chest pain, bloody cough, sometimes severe bleeding. Aspergillosis is of three types: Allergic Bronchopulmonary Aspergillosis (ABPA) causing wheezing, cough, and shortness of breath; Chronic Pulmonary Aspergillosis (CPA)-long term infection often forming a fungal ball (aspergilloma) often confused with TB caused by *Mycobacterium tuberculosis;* and Invasive aspergillosis-where the infection spreads beyond lungs to other organs involving

brain, kidneys, and bones and is life-threatening. Cutaneous aspergillosis may also occur through contaminated medical devices.
Aspergillosis is one of those most rapidly progressing fatal mycoses, especially with the emerging resistance to antifungal drugs (e.g., azoles) in Aspergillus fumigatus, the main treatment for aspergillosis. Globally, over 4.8 million people have ABPA, and about 2 million people are affected annually with mortality rates often exceeding 50% in ICU settings. Diabetics have a 27-40% higher risk of developing IPA due to hyperglycemia- induced impairment of immune system (affecting phagocytic ability of white blood cells, the granulocyte).

Aspergillosis is diagnosed by chest X-rays/CT scans, biopsy, blood tests and sputum sample examinations. Direct microscopy of tissue samples; Fungal culturing on Sabouraud Dextrose Agar (SDA) incubated at 37°C and Lactophenol Cotton Blue (LCB) mount examinations for septate hyphae, and columnar conidial heads and uniseriate flask-shaped phialides, producing unicellular spherical conidia (2.5-3µm) from the blue-green to smoky-grey, velvety colonies. Galactomannan antigen testing for serum and bronchoalveolar lavage fluid; Beta-d-glucan assay to detect cell wall component of Aspergillus; and PCR assay of tissues and bronchoalveolar lavage fluids. Management of aspergillosis in diabetics often requiring prompt diagnosis, and strict glycemic control (HbA1c) through antidiabetic drugs (e.g., metformin, semaglutide, gliptins, glimepiride) and treatment by antifungal therapy and surgical debridement of necrotic tissues to improve the low survival rates.

Biography

Prof. K.R. Aneja Ph. D. D.Sc., is the recipient of many Awards and Fellowships, the major one's include: 2022 MSI Lifetime Achievement Award, President of the Mycological Society of India (2013), Recorder of ISCA, INSA-Royal Society Academic Exchange Fellowship, Best Citizens of India, Rashtriya Gaurav, ISWA lecture award, Shiksha Rattan Samman, and 2023 Unnat Bharat Shewa Shree Award. Aneja served as the Governor's/Chancellor's nominee for Teacher's Selection at Punjabi university, Patiala, Member of the Research Advisory Committee of ICAR Weed Research Centre, Jabalpur, M.P, India, Member RPC, as well as and Expert Member of the ICFRE, Dehradun. Aneja got his B.Sc., M.Sc. and PhD degrees from Kurukshetra University Kurukshetra, and Vidya-Vachspati Award from Kashi Hindi Vidyapeeth, Varanasi. Aneja served in the Departments of Botany and Microbiology, Kurukshetra University for 34 years, and joined the teaching faculty in the same Institute and served as Professor & Chairman for 11years, supervised 23 PhD scholars & 50 M.Phil. candidates; published 185 research papers/ reviews/chapters; over 57 abstracts, attended over 50 National and International Conferences, delivered Lead lectures and Chaired several sessions, valedictory addresses; authored/co-authored 16 books, edited 5 books, written 2 manuals, and Proceedings of an International Conference published by International Publishers (04) and National Publishers (19). Aneja is an Honorary Professor & Research Advisor at the Sardar Bhagwan Singh University, Dehradun (Uttarakhand).

Kristina Dimitrijevic

University Clinic of Pulmonology and Allergology, Department of Radiology, University St. Cyril and Methodius, Faculty of Medicine-Skopje, N. Macedonia

High-Resolution Computed Tomography (HRCT) as a key diagnostic tool in rare Interstitial Lung Diseases (ILDs): Imaging patterns and clinical correlation from a single-center experience

Rare Interstitial Lung Diseases (ILDs) comprise a heterogeneous group of diffuse parenchymal disorders with overlapping clinical presentations, making diagnosis challenging. High-Resolution Computed Tomography (HRCT) has become a central noninvasive tool for early detection and characterization of these uncommon entities.

We conducted a retrospective review of confirmed cases of rare ILDs at the University Clinic of Pulmonology and Allergology, Faculty of Medicine, Skopje. HRCT findings were analyzed with emphasis on imaging patterns, lesion distribution, and distinctive radiologic features, and correlated with clinical data.

HRCT revealed characteristic disease-specific patterns that improved diagnostic confidence. These included bizarre-shaped cysts in Pulmonary Langerhans Cell Histiocytosis (PLCH), diffuse thin-walled cysts in Lymphangioleiomyomatosis (LAM), centrilobular nodules and air trapping in Hypersensitivity Pneumonitis (HP), non-segmental peripheral consolidations in chronic eosinophilic pneumonia, and ground-glass opacities with septal thickening in pulmonary alveolar proteinosis.

HRCT enabled early recognition of subtle parenchymal abnormalities, guided further diagnostic procedures, and supported therapeutic decision-making.

Recognition of characteristic HRCT patterns is essential for radiologists and pulmonologists to enhance diagnostic accuracy and optimize patient management in rare ILDs.

Keywords: HRCT; Rare Interstitial Lung Diseases, Cystic Lung Disease, Imaging Patterns.

Biography

Assoc. Prof. Dr. Kristina Dimitrijevic was born on January 5, 1988, in Skopje, Republic of Macedonia. She completed her secondary education in 2006 at the "Georgi Dimitrov" Gymnasium in Skopje with continuous excellent success, as one of the top students of her generation. She obtained her higher education at the Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, graduating in 2012 with an average grade of 9.07. Between 2013 and 2017, she completed her specialization in Radiology at the Institute of Radiology, Faculty of Medicine in Skopje, and on September 1, 2017, she obtained the title Specialist in Radiology. In the 2017/2018 academic year, she enrolled in second-cycle (master's) studies at the European University–Faculty of Economics, Department of Health and Pharmaceutical Management, which she completed with an average grade of 9.5. On October 1, 2018, she defended her master's thesis entitled: "Management of Current Costs and Investments for the Improvement of Health Services in a Tertiary Healthcare Institution." During the 2015/2016 academic year, she enrolled in third-cycle (doctoral) studies in Clinical Medicine – field of Radiology at the Ss. Cyril and Methodius University in Skopje, Faculty of Medicine. She successfully completed her PhD on October 17, 2024, with an average grade of 9.71, earning the academic title Doctor of Medical Sciences–Clinical Medicine in the field of Radiology, with a dissertation entitled: "Evaluation of Interstitial Lung Diseases Using High-Resolution Computed Tomography and Their Correlation with Clinical Symptomatology." From 2020 to 2023, she served as a Lecturer at the Higher Medical School in Bitola, University "St. Kliment Ohridski," where she participated in undergraduate and postgraduate teaching. Since 2020, she has been employed at the University Clinic of Pulmonology and Allergology in Skopje, Department of Radiology, where she continues to work. On September 12, 2023, she was elected as an Assistant Professor at the Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, in the field of Radiology, and as of June 2025, she holds the title of Associate Professor at the Department of Radiology. She is actively involved in preparing and delivering lectures and practical training for medical and dental students, as well as in the education of residents at the Department of Radiology. Assoc. Prof. Dr. Kristina Dimitrijevic has attended professional training programs in Salzburg (Austria), St. Petersburg (Russia), Vienna, Chicago, Crete, Novi Sad, and other international centers. She is an active member of the Macedonian Medical Association, the Medical Chamber of North Macedonia, the European Society of Radiology (ESR), and the European Society of Thoracic Imaging (ESTI). She holds numerous certificates from scientific and professional workshops, both as an active lecturer and participant in national and international conferences, as well as a certificate in clinical research participation–GCP (Good Clinical Practice). She is fluent in English and German, holding the certificates APTIS English B2/C1 and Zertifikat Deutsch B2 (Goethe-Institut). Assoc. Prof. Dr. Kristina Dimitrijevik is the author and co-author of more than 25 scientific papers published in national and international journals and conference proceedings.

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Menopause worsens donor lungs status after Brain Death (BD)

Background: Lung transplantation is an established treatment for end-stage pulmonary diseases; however, organ scarcity remains a major limitation. The lung is particularly vulnerable to injury following Brain Death (BD), and evidence indicates that females may exhibit a heightened inflammatory response, possibly related to abrupt reductions in female sex hormones. In parallel, demographic shifts have increased the proportion of older donors, emphasizing the need to better understand menopause-associated changes in female lung donors.

Methods: Our study investigated the effects of menopause on pulmonary inflammation in female rats subjected to BD, focusing on inflammatory mediators and leukocyte trafficking. To this end, adult female Wistar rats underwent menopause induction using 4-vinylcyclohexene diepoxide, followed by a period of aging, with menopause confirmed by hormonal analysis. Subsequently, BD was induced by intracranial balloon inflation, and animals were mechanically ventilated for six hours, while sham-operated rats served as controls. Blood counts, bone marrow cellularity, bronchoalveolar lavage, serum inflammatory mediators were quantified. Lung histopathology and cytokine release from lung tissue cultures and immunohistochemistry for inflammatory markers were analyzed.

Results: Menopausal rats exhibited disrupted estral cycles, reduced estradiol levels, and elevated follicle-stimulating hormone. Following BD, leukopenia was observed in both young and menopausal animals; however, menopausal BD rats showed reduced circulating granulocytes alongside increased granulocyte infiltration into the lungs and higher bone marrow cellularity. Moreover, anti-inflammatory IL-10 levels were reduced in menopausal BD

animals, whereas pro-inflammatory cytokines IL-1β and IL-6 were increased in lung tissue cultures. Menopause also increased lung edema and hemorrhage. Immunohistochemical analysis indicated higher ICAM-1 and iNOS expression after menopause.

Conclusion: Menopause alters the pulmonary inflammatory response by generating a proinflammatory status that, following BD, is worsened especially by enhancement of leukocyte recruitment to lung tissue. These insights may contribute to improved donor evaluation and management strategies in lung transplantation.

Biography

Luciana Coelho Marques is a fourth-year medical student at the University of São Paulo (USP), a leading academic institution in Latin America. She is currently involved in research on pulmonary inflammation in female rats undergoing menopausal transition, with implications for lung transplantation, particularly amid shifts in donor demographics. She has broad interests in both basic and clinical research and actively participates in academic leagues and extension groups. Luciana values teamwork, engages in diverse academic activities, and has international experience in cardiac and lung transplantation, aiming to integrate research, collaboration, and clinical excellence into her medical career.

Mariano Votta

Responsible EU Affairs at Cittadinanzattiva, Italy

Director Active Citizenship Network, Italy

Incorporating COVID-19 into the broader narrative on respiratory diseases. A citizens' and patients' perspective towards the development of an EU Respiratory Health Plan

Respiratory diseases represent a major and persistent public health challenge in the European Union, contributing substantially to morbidity, mortality, healthcare utilisation, and health inequalities. Despite existing initiatives, respiratory health remains insufficiently integrated into broader infection, prevention and control strategies, vaccination plans, programmes to fight antimicrobial resistance.

Starting from the current burden of respiratory diseases in the EU-including the Vaccine Preventable Respiratory Diseases (VPRDs)–a consensus-based expert policy analysis was conducted through a multidisciplinary European Working Group on Respiratory Care, comprising healthcare professionals and leaders of civic and patient organisations.

This presentation aims to outline policy priorities to support a more integrated, equitable, and resilient European respiratory health strategy, emphasizing the collaborative role of all the actors, publics and privates, of the HCPs-Health Care Professionals and of the so-called intermediated bodies of the society: Patients' associations, PAG-Patients Advocacy Groups, CSOs-Civil Society Organizations.

Biography

Mariano Votta is responsible for EU Affairs at the Italian NGO Cittadinanzattiva and Director of its EU branch “Active Citizenship Network”. Passionate about health & consumer issues, Mariano has 25 years of experience in advocacy, stakeholder engagement, communication, European Public Affairs & EU funded-projects. Mariano holds a Degree in Political Science and two post-graduate master's degrees in European Public Relations and Corporate Social Responsibility. He is also a journalist with more than 50 publications in international peer-reviewed journals. He led the political initiative to launch in 2015 at the EU Parliament the Interest Group "EU Patients' Rights & Cross-Border Healthcare,"–now at its third mandate-endorsed by more than 100 organisations across Europe and dozens of Members of the European Parliament. In 2016 Mariano won the Efhre International University Excellence Awards on patients’ rights.

Marlene F. Escobedo-Monge[1*], Enrique Barrado[2], Joaquín Parodi-Román[3], María A. Escobedo-Monge[4], Marianela Marcos-Temprano[5], Carmen Alonso-Vicente[1], María Carmen Torres-Hinojal[1], María Paz Redondo Del Río[1], José Manuel Marugán-Miguelsanz[6]

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Micronutrient deficiency in Cystic Fibrosis (CF)

Cystic Fibrosis (CF) is a genetic disorder caused by various mutations that primarily impact the respiratory and digestive systems and can necessitate the intake of micronutrients. This research was a cross-sectional study to investigate micronutrients in a group of CF patients. We evaluated phenotypic characteristics, biochemical tests, and a dietary survey conducted over 72 hours. We assessed the levels of serum Zinc (Zn), Copper (Cu), Calcium (Ca), Magnesium (Mg), phosphate, and vitamin D. Seventeen CF patients participated (10 women, 59%), 76.5% had a Delta F580 mutation. Mean serum Zn (87µg/dL), serum Cu (113µg/dL), and dietary Zn intake (97% DRI: Dietary Reference Intake) were normal. Three of the 17 CF patients (17.6%) had hypozincemia, and four (23.5%) had dietary Zn deficiency. The mean serum Ca level was 2.45mmol/L, and the Mg level was 0.82mmol/L, indicating regular levels. The average dietary intake of Ca was 127% DRI, and Mg intake was at 125% DRI, indicating high levels of both nutrients. No patients had hypocalcemia. A total of 47 and 82% of our series had a high serum Ca/Mg ratio of >4.70 (mean 4.89) and a low Ca/Mg intake ratio of <1.70 (mean 1.10), respectively. 47% of patients had a deficiency in vitamin D intake, 53% had hypovitaminosis D, 35% had insufficient vitamin D levels, and 18% had hypophosphatemia. No patients with dietary Zn deficiency exhibited hypozincemia, indicating a potential marginal Zn deficiency. This situation suggests that approximately 41% of the cases may be at an increased risk of Zn deficiency. In 94% of CF cases, the Cu/Zn ratio was greater than 1.00 (with a normal value of 0.7-1), indicating a possible state of inflammation and highlighting the risk of Zn deficiency in these

cases. These patients had a higher risk of vitamin D deficiency. Ca/Mg ratios were associated with the risk of developing cardiovascular disease, type 2 diabetes, metabolic syndrome, and even several cancers.

Biography

Marlene is a paediatrician, Doctor of Medicine, and researcher at the Faculty of Medicine of the University of Valladolid. She has a PhD in Health Sciences Research and three master's in clinical nutrition, Biological Aspects of Nutrition, and Microbiota. Her primary interests include food safety and biofortification, as well as research studies on micronutrients and the nutritional status of patients with malnutrition and chronic diseases. She is aware of the importance of personalized and precision medicine in the pediatric population, considering the new tools offered by Translational Medicine.

Dr. Mayank Shukla

Professor, Sharda School of Allied Health Sciences, Sharda University, Greater Noida, Uttar Pradesh, India

Clinical reasoning of airway clearance physiotherapeutic techniques and their documentation for improved efficacy

The study presents a clinical reasoning and documentation framework for chest physical therapy techniques for pulmonary patients. The gap addresses a lack of confirmatory evidences or clinical care pathways, and a need to do the bedside analysis and creation of treatment plan for patients with specific pulmonary presentation like dyspnoea or retention of secretions. Techniques like positioning and knowledge of surface anatomy of the lungs are crucial for the success of the therapy.

There are many equivocal findings about the chest physical therapy and adverse effects and many no effect studies are also available. The background of such findings may be a discordance emerging from different clinical pathologies, diagnosis and the lack of exact focus of the scope and role of the physiotherapist in the presentation. The topographical anatomy of the lungs impair the simple application' success if the reasoning aspect is missed. The physiotherapy as distinct from the routine pulmonary care deals with improved activity and participation. This requires matching presentations with interventions at physical and physiological levels. Moreover routine care may provide a preventive and promotive therapy but lacks the curative aspect as specific to the presentation.

Hereby a framework for clinical reasoning including the pulmonary pathology and the involvement of the structure and function with exact focus in the oxygen carrying pathways and oxygen transport variables is given. This aspect highlights the possible role for the physiotherapist. It is followed with the evidence based inclusion of the chest physical therapy technique, with a clear dose dependent protocol. Finally a valid and reliable outcome measure

with follow-up and clear documentation is proposed for the efficacy of the therapy. This approach may facilitate development of the physiotherapy care pathways in a given setting where we have more of a single disease presentation. This is called as a clinical reasoning and documentation framework for pulmonary physiotherapy.

Biography

Prof Dr. Mayank Shukla has a PhD in Sports Medicine and Physiotherapy, and MPT in Cardiopulmonary PT, he has been trained at the best hospitals including the AIIMS, New Delhi. He has 21 years+ of teaching and clinical experience, along with international teaching experience at LTU-Sweden. 2 of his papers are part of WHO Covid-19 database. He is guiding PhD scholars in the field of Physiotherapy. He is heading the Physiotherapy department at Sharda Hospital. He has been chairperson in international and national conferences. His research includes -Publication (30) Patents (7) published, (1) granted patents.

DDS Monika Ośko
Orthodontic World Institute, Barcelona University, Spain

The 'airflow channel' as a regulator of overall health: The role of the upper airway, Intermittent Hypoxia (HIF), and the Myofunctional Stimulation (MFS) approach in preventing respiratory dysfunction

The upper airway—the "airflow channel" (nose, nasopharynx, and pharynx)—is not merely a passive conduit. Breathing route (nasal vs. oral), nasal airway resistance, and nasopharyngeal mechanics influence ventilation quality and gas exchange both day and night, thereby modulating systemic processes such as autonomic regulation, inflammatory signaling, stress responses, and central nervous system function. Perinatal factors should also be considered: Mode of delivery may influence early reflex integration and the coordination of sucking–swallowing–breathing, shaping the preferred breathing route and upper-airway load across later developmental stages.

Clinically, care often targets manifestations rather than drivers, when patients present with "unexplained" reduced functioning: Inadequate recovery, reduced exercise tolerance, morning headaches, impaired concentration ("brain fog"), and features of autonomic dysregulation, exaggerated stress reactivity. A systems approach instead emphasizes identifying and modifying determinants within upper-airway function—determinants linked not only to craniofacial development, but also to broader health regulation.

Mechanistically, evidence from physiology and cellular biology indicates that oxygenation instability—including Intermittent Hypoxia (IH) typical of unstable breathing and sleep-disordered breathing—can trigger adaptive and/or maladaptive responses in which Hypoxia-Inducible Factors (HIF) play a central role. The HIF pathway is a key component of cellular oxygen sensing, recognized by the 2019 Nobel Prize in Physiology or Medicine.

This presentation introduces the MFS (Myofunctional Stimulation) philosophy as a causal, preventive, and interdisciplinary approach linking upper-airway function with craniofacial growth biology and downstream systemic consequences. It highlights developmental anatomy of the nasal cavity and paranasal sinuses and proposes practical, team-based clinical pathways for assessment, intervention, and follow-up.

Biography

Monika Ośko (Orthodontic World Institute; University of Barcelona) is a dentist, orthodontic clinician, and educator focused on the interface between upper airway function, craniofacial development, and preventive care. Monika is President of the Polish Myofunctional Therapy Society (PTTM) and an MFS (Multifunctional System) Ambassador. Monika graduated from the Poznań University of Medical Sciences with the University Medal and is currently pursuing PhD studies at the University of Barcelona. Monika completed specialist postgraduate training at the Università degli Studi di Siena (Italy) in advanced clinical orthodontics (Second Level). Monika holds international credentials as an Orthodontic Senior Instructor and Diplomate of the International Board of Orthodontics. Monika developed the proprietary MRT myofascial release method and designed a patented instrument used in MRT-based therapy. Monika also leads the modular MFS training program and develops standardized clinical protocols.

Swati Singh, Nikita Goswami*, Anil K. Tyagi, Garima Khare
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Investigating the role of *Mycobacterium tuberculosis* transcriptional regulator VirS in acidic responses and identification of inhibitors against it

The ability of *M. tuberculosis* to respond to intramacrophage stresses such as oxygen/nitrogen radicals and low pH is important for its persistence. It has been reported earlier that an AraC/XylS type transcriptional regulator, VirS, is induced under low pH and regulates cell envelope architecture. However, a comprehensive understanding of how VirS mediates its influence on gene expression to coordinate pH response remains uncharacterized. Here, by using multiple approaches, we investigated the contribution of VirS in maintaining intramycobacterial pH homeostasis. Using a genetic biosensor of cytoplasmic pH, we demonstrated that VirS is required to maintain intramycobacterial pH in response to acid stress. Furthermore, loss of VirS reduced *M. tuberculosis's* ability to block phagosomal-lysosomal fusion, indicating that VirS regulates phagosomal maturation. Transcriptomics data indicate that VirS affects the expression of genes involved in cell wall synthesis, efflux pumps, ion transporters, metabolic enzymes, transcription regulation and growth under acid stress. Furthermore, we performed EMSA, DNA footprinting and 3-D structure generation. Structure guided mutational studies revealed key residues required for its interaction with DNA. Importantly, we performed structure based virtual screening to identify inhibitors against VirS. We identified a few hit compounds that inhibited VirS DNA binding activity as well as the growth of *M. tuberculosis* in vitro broth culture. Taken together, our findings establish an empirical role of VirS in mediating *M. tuberculosis's* response to acidic stress and suggest that targeting of VirS can be effective anti-mycobacterial strategy. These studies also pave way to design novel M. tb inhibitors targeting VirS.

Biography

Nikita Goswami is a PhD scholar in Department of Biochemistry at University of Delhi south Campus, India and second author of research paper. Nikita basic interest lies in Infectious Diseases, since Nikita has done PhD on *Mycobacterium tuberculosis*, a deadliest foe ever exists in history of mankind. Nikita at the beginning of his career in research, Nikita keen to explore new vistas in science. Nikita perseverance, verve for discovery, and strong work ethic will help achieve success in future pursuits. Nikita looks forward to attending the conference that transcends academic constraints to become a fulfilling journey of discovery, development and an overall memorable experience!

Dr. Parul Mrigpuri

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Navigational bronchoscopy: Present capabilities and future promise

Navigational bronchoscopy represents a paradigm shift in the diagnosis and management of peripheral pulmonary lesions. This minimally invasive technology guides endoscopic tools to pulmonary lesions with unprecedented precision, addressing a critical clinical need in contemporary pulmonary medicine. The increasing detection of pulmonary nodules through lung cancer screening programs and incidental findings on cardiac and abdominal CT scans has created significant diagnostic challenges. Over 90% of nodules identified in the National Lung Cancer Screening trial were benign, necessitating accurate yet minimally invasive characterization methods to reduce patient morbidity. Navigational bronchoscopy demonstrates significantly higher diagnostic yields compared to conventional bronchoscopy, with multi-center studies reporting 12-month diagnostic yields of 73% and procedural completion rates of 94%. Two primary technological approaches have emerged: Electromagnetic Navigation Bronchoscopy (ENB) and Virtual Bronchoscopic Navigation (VBN). ENB platforms, including the SuperDimension™ system and SPiN Thoracic Navigation System™, generate electromagnetic fields around the patient enabling real-time sensor tracking mapped to 3D CT reconstructions. VBN platforms such as LUNGVISION™ and Archimedes™ utilize augmented fluoroscopy and bronchoscopic transparenchymal nodule access procedures.

Recent advances in robotic bronchoscopy have further enhanced capabilities. The Ion™ endoluminal system employs shape-sensing catheters with cone-beam CT integration, achieving diagnostic yields up to 85.9%. The Monarch™ platform utilizes dual-scope electromagnetic navigation with continuous endoscopic visualization. The galaxy system integrates digital tomosynthesis (TiLT+) for real-time tool-in-lesion confirmation, reporting diagnostic yields of 89.5% with 100% target localization in early trials.

Future developments include artificial intelligence integration with automated airway segmentation (NaviAirway model), autonomous co-pilot systems with AI-human shared control algorithms, and therapeutic expansion encompassing transbronchial microwave ablation, near-infrared fluorescence imaging, and autofluorescence imaging for tissue characterization.

Navigational bronchoscopy continues to evolve as an essential tool in interventional pulmonology, offering enhanced diagnostic accuracy, reduced complications, and expanding therapeutic applications for peripheral lung lesions.

Biography

Dr. Parul Mrigpuri is an Associate Professor in the Department of Pulmonary Medicine at Vallabhbhai Patel Chest Institute, University of Delhi, India. With extensive expertise in respiratory medicine and interventional pulmonology. Her clinical and research interests focus on navigational bronchoscopy and management of complex pulmonary diseases. She is actively involved in teaching, clinical practice, and research in respiratory medicine.

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Investigation of suspected pulmonary tuberculosis cases in Katiali in the Dianra Health District, Côte d'Ivoire, June 2021

Introduction: On June 10, 2021, the health district of Dianra notified the epidemiological surveillance service of the National Institute of Public Hygiene of four suspected cases of pulmonary tuberculosis residing in the village of Katiali located 7 km from the said district. We conducted an investigation to confirm the disease and to implement control and prevention measures in order to break the chain of transmission.

Method: We conducted a descriptive cross-sectional study from June 23 to 26, 2021, in the village of Katiali with an estimated population of 719 in 2020. A suspected case was defined as any person in Katiali with a cough lasting more than 14 days, whether or not associated with any of the following signs: Fever in the evening or afternoon; sweating at night; intense fatigue; lack of appetite; weight loss or weight loss; cessation of menstruation without pregnancy in women of childbearing age, between 18 March and 10 June 2021. A confirmed case was defined as any suspected case with a positive laboratory result for BAAR by microscopy or Xpert MTB/RIF test.

Results: We recorded 12 suspected cases of which 1 was confirmed with pulmonary tuberculosis, with a positivity rate of 8.3%. The median age of the suspected cases was 7 years with extremes ranging from 3 to 46 years. The male/female sex ratio of the suspected cases was 0.5. The confirmed case was a 7-year-old girl, a second-grade student, in a household of 3 members. 16 contacts of the confirmed case were identified and followed up, of which 6 (37.5%) tested negative by microscopy. The confirmed case was isolated and treated with antituberculosis drugs and the close contacts under 5 years of age were put on isoniazid prophylaxis.

Conclusion: The investigation of suspected cases of katiali tuberculosis identified 12 suspected cases, including 1 confirmed case of pulmonary tuberculosis and 16 contacts of the confirmed case. The isolation of the confirmed case, its management, the prophylaxis of the contacts and their follow-up allowed to limit the spread of tuberculosis in Katiali. We recommend strengthening the technical platform of the general hospital of Dianra for early detection of tuberculosis and sensitizing the community to massively adhere to the extended vaccination program.

Keywords: Investigation, Tuberculosis, Suspected Cases, Katiali, Côte d'Ivoire.

Biography

Dr. Pegnontaye Moussa Soro is field coordinator of the Advanced Training Program in Field Epidemiology in Côte d'Ivoire (CIV-FETP) and works for the Ministry of Health at the National Institute of Public Hygiene (INHP). Since graduating from the FETP Advanced Program in Burkina Faso in 2022, Pegnontaye has worked to implement the FETP Advanced Program in Côte d'Ivoire, supporting and mentoring residents whose work has received international acclaim. Pegnontaye draws on his experience gained through the FETP program to learn and share his experience with future FETP residents. Pegnontaye worked on dengue fever in 2024 as part of the APDC grant project and helped discover a co-infection of dengue fever and malaria in the same patient.

Dr. Pooja M R

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Navigating intelligent healthcare systems for better respiratory care

Intelligence has been an integral component of every aspect in almost all arenas of life. In the healthcare industry, the degree to which it has been impacted is comparatively low and the progress is in smaller steps when compared to those made in other fields. This can be attributed to several challenges and hurdles faced in healthcare systems. Adding to this, intelligence is not justified in beyond proof-of-concept studies. Recent years however have embraced hybrid models that involve incorporation of intelligence from AI systems, besides leaving the ultimate responsibility of disease identification/outcomes in the hands of the clinician as a means of critical intervention. Intelligent healthcare systems combine Artificial Intelligence (AI), Machine Learning (ML), Internet of Medical Things (IoMT), big data analytics, and telemedicine to improve diagnosis, monitoring, and treatment of respiratory diseases. Respiratory medicine benefits greatly because many lung diseases require continuous monitoring, early detection, and rapid intervention. AI analyses lung scans and spirometry data for early detection of respiratory issues, often outperforming traditional methods. Smart inhalers track usage, technique, and adherence via sensors, sending data to providers for timely adjustments. Remote monitoring tools, including wearables and telemedicine platforms, enable continuous tracking of oxygen levels and symptoms, reducing hospital visits. Growing number of studies have indicated the successful implications of intelligence through analytics in areas including patient stratification, decisions at triage and prediction of severity levels of disease.

Biography

Dr. Pooja M R is currently working as Professor and Head in the Department of Computer Science & Engineering at Vidyavardhaka College of Engineering, Mysuru. Pooja has more than 40 research publications in peer reviewed international journals and international conferences. Pooja's research interests include Machine Learning and Artificial Intelligence, Big Data Analytics and Health informatics. Pooja has received appreciation for her multidisciplinary research with substantial contributions in the field of Health Informatics and Artificial Intelligence. Pooja is nominated as Bentham Ambassador from INDIA in recognition of her research in Medical Informatics. Pooja has been selected as Editorial Board Member for various peer reviewed international journals. Besides being honoured as session chair Pooja has been the member of the Technical Program Committee of various international conferences be Pooja has delivered talks as an invited speaker at various international conferences including COPD-2021, CWC-2021, World Conference on Pediatrics and Neonatal Healthcare, Global Conference on Healthcare held in North Macedonia, Turkey, US and UK. Pooja has been a resource person for AICTE sponsored Faculty Development Programmes on both Data Science and Cyber Security. Pooja has been the Speaker on Data Science at Annual International Meet on Women in Data Science-2021. Pooja is a member of various international professional Bodies. Pooja has attended various workshops organized by AICTE for implementation of Outcome Based Education and has been a resource person for the same. Pooja was the Program Chair for AICDMB-2023, AICTE sponsored Fourth Annual International Conference on Data Science, Machine Learning and Blockchain Technology organized at Vidyavardhaka College of Engineering, Mysuru.

Prof. Rachana R

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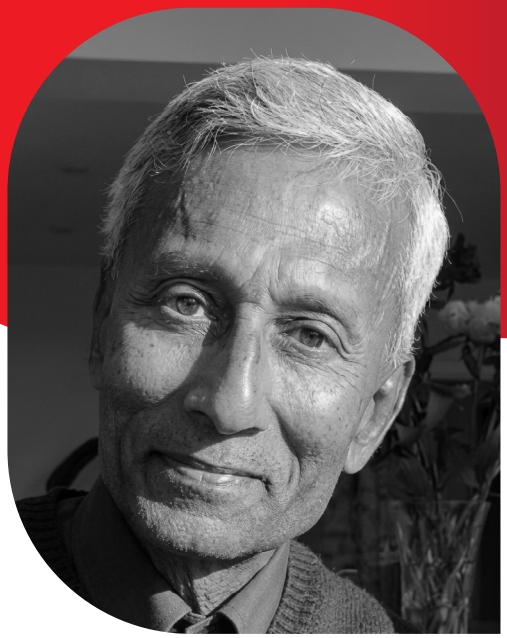
Preparation and characterization of nano-liposomal formulation for respiratory disorders

Respiratory diseases have become very common and the severity of the diseases has also increased in the present scenario of air pollution. Many of these diseases are linked to allergies and inflammations which are caused by the irritants present in in-door and out-door air surrounding us. As most of the current day's medicines are linked with several side effects, scientists are currently looking for potential drug molecules from plants. India has a rich culture of plant-based medicines which are combinedly being studied and evaluated in AYUSH system these days. Though scientist have been able to identify potential drug candidates from these natural products the major problem associated with these molecules is that they are commonly known to have low bioavailability, shorter shelf life and easy biodegradability. Use of nanotechnology has been very beneficial to overcome these challenges. The current study was conducted to design nano-liposomal formulation from the plant Eucalyptus and *Adhtoda vasica* to overcome the disease ARDS (Adult Respiratory Distress Syndrome). The nanoliposome of size 70-200nm were prepared, characterized and were evaluated for the safe dose range. Further it was found that they are able to overcome certain very important features which would help to normalize the respiratory process such as: Surface tension inside the alveoli. inflammation and apoptosis. Present study describes the preparation, characterization and evolution of nano-liposomal formulations for respiratory disorders.

Biography

Rachana has been with the Department of Biotechnology at Jaypee Institute of Information Technology since June 2009. Previously, she worked at SPTM, NMIMS University, Mumbai. Rachana completed her postgraduate studies in Biotechnology at IIT Roorkee (1998) and earned her PhD from IIT Bombay (2006). Rachana qualified NET-LS and GATE, topping the

Kanpur zone. Rachana holds two Indian patents, authored 3 textbooks, and contributed to 60 international publications. A fellow of Biotechnology Society of India, her work focuses on molecular mechanisms of plant-based treatments for diseases like ARDS, asthma, diabetes, cancer, and Alzheimer's.



Ranjan Ramasamy

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Susceptibility to SARS-CoV-2 infection and nasal air conditioning ability

The nasal cavity has an important physiological role in warming and humidifying inspired air before the it enters the nasopharynx and trachea. This process has been termed nasal air conditioning. Nasal structures vary geographically, and have been correlated with the varying needs for nasal air conditioning in cold and dry climates at one extreme and warm and humid climates at the other. Morbidity and mortality from COVID-19 during the pre-vaccination phase of the pandemic was reported to be greater in persons of tropical descent in temperate zone countries and was attributed to differential nasal air conditioning ability influencing protective immune responses in the upper respiratory tract to SARS-CoV-2. Supportive scientific evidence, and the implications for controlling respiratory viral infections and our understanding of human evolution, are discussed.

Biography

Ranjan Ramasamy obtained a BA and PhD from the University of Cambridge, UK. He has held academic appointments in the UK and abroad including Australia, Sri Lanka and the USA. Ranjan was the Chairman of the National Science Foundation of Sri Lanka, and held Professorial appointments in Biochemistry, Immunology and Life Sciences. Ranjan was a member of the Board of Governors of the International Centre for Genetic Engineering and Biotechnology (ICGEB), and a member of Committee for Scientific Planning and Review (CSPR) of the International Council for Science (ICSU) for several years. Ranjan has 300 publications pertaining to Biochemistry, Immunology and Infectious Diseases.

Rekha Khandia

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Role of various viruses and their codon choices involved in causing lung cancer

At present, almost all countries are suffering with the deadly consequences of the SARS CoV-2 virus. Though ~80% among affected patients get recovered from this disease but patients suffering from comorbidities especially heart and lung diseases like, COPD (Chronic Obstructive Pulmonary Disease), asthma, lung cancer, etc. are at high risk of fatal consequences of the viral infection. As the disease COVID-19 caused by the SARS CoV-2 in such patients affect the airflow and increases inflammation in respiratory tract further leading to death. Other viruses like Parainfluenza Virus (PIV) and Human Metapneumo Virus (HMPV) are minor pathogens like coronaviruses, also affect all age group including children suffering from asthma. These viruses are contagious and classified under the same family Paramyxoviridae. We performed computational study involving various CUB indices to understand the synonymous codon usage pattern and host adaptation of HMPV viral genome using the genome sequences available on NCBI. In this study, we have considered a total of 89 transcripts (HMPV) that are an exact multiple of three bases and having a start and stop codon without any unknown base (N) in the entire length of coding sequences. The nucleotide composition analysis of HMPV, depicted A and T preference over G and C at first and third codon positions. The RSCU analysis represented A/U ending codons preference over G/C ending codons in the viral genome. Codon Adaptation Index (CAI), RCDI and similarity index are the major parameters that reveals host relatedness, the present study showed strong host adaptation for *Homo sapiens*.

Biography

Dr. Rekha Khandia presently working as Assistant Professor in Genetics in the Department of Biochemistry and Genetics, Barkatullah University, Bhopal, India. Khandia gained PhD in 2009. Khandia has vivid experience working in biosafety containment facility 3 and worked on pathogens like anthrax, Nipah, and H5N1 Avian Influenza. Khandia has experience in reverse genetics and successfully rescued tailored Influenza virus for vaccine purposes. 12 years of working experience in the making killed, attenuated, subunit, and DNA vaccine candidates against viral and bacterial pathogens. Presently working on computational aspects related to immunoinformatics and codon usage. Dr. Khandia has been awarded among worlds top 2% Scientists since last 4 years and have 2 patenets in her credit. She has more than 130 publications in SCI(E) journals.

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AI-driven patient navigation enables 12-day pulmonary nodule detection to diagnosis pathway for stage IB lung cancer in El Salvador

Introduction: Pulmonary nodules detected on imaging frequently fail to translate into timely diagnoses due to fragmented and gaps in follow-ups. Even technically successful AI detection of lung nodules on imaging may be clinically redundant in the absence of structured and gap free patient navigation. We report a case from El Salvador where integrated AI Chest X-Ray (CXR) analysis and AI enabled patient navigation achieved a Stage IB lung cancer diagnosis within 12 days of nodule detection.

Case Presentation: A 70 year non-smoker female, was referred from a Primary Care Unit (PCU) to hospital for CT thorax on December 22, 2025. The CT report identified a pulmonary nodule; however, no follow-up pathway was triggered, and no subsequent step was arranged. The patient returned to the PCU few days later to receive the results of CT scan. The review found abnormality in CT and patient was referred to hospital for next steps. On January 28, 2026, a CXR was performed at the hospital and analysed by AI (qXR), which detected the pulmonary nodule and patient was automatically added into the qTrack (AI) patient navigation workflow. A navigator reviewed the full imaging (CT) history of the patient and in a Multidisciplinary Team (MDT) biopsy was recommended as a next step. Biopsy was performed on February 2, 2026, just five days after qXR detection of nodule and confirmed Lung Cancer (Adenocarcinoma) Stage IB (T2a NO MO) in Right Middle Lobe on February 9, 2026.

Discussion: This case illustrates the gap between nodule detection and clinical action. The CT detection of pulmonary nodule on December 22 highlighted the gap in follow ups as there was no structured pathway suggested to the patient for nodule follow up. When the same nodule was flagged by qXR six weeks later, qTrack immediately embedded it within an accountable workflow. MDT escalation was done, and biopsy scheduling happened in five days. The CT to CXR imaging sequence reflects a clinical regression highlighting care fragmentation, and gaps in nodule management. This case demonstrates qTrack`s value of plugging the follow up gaps for lung nodules and ensuring every nodule gets appropriate care.

Conclusion: This real-world case from El Salvador demonstrates that AI-powered structured patient navigation can close the follow-up gap and achieve early-stage lung cancer diagnosis in resource-constrained settings. A 40-day trajectory was compressed to 12 days with a Stage IB outcome, a surgically curable stage with >70% five-year survival. Nodule detection without effective navigation is insufficient, thus demonstrating the value of AI (qTrack) enabled navigation which ensures early-stage lung cancer diagnosis.

Biography

Dr. Rohitashva Agrawal is a physician scientist and Director of Clinical Strategy & Research at Qure.ai. Agrawal has expertise in Oncology and holds MPH from Boston University. Agrawal trained in India for medical and legal domains. Following a postdoctoral fellowship at Harvard Medical School and Massachusetts General Hospital, USA he has built an internationally recognized career at the intersection of clinical AI, real-world evidence, and global health. Agrawal's work spans thoracic oncology, cardiovascular, and respiratory medicine across LATAM Europe, Africa, Asia & USA. Agrawal has driven landmark pharma partnerships and contributed to 25+ peer-reviewed publications and multi-geography AI programs.

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Formulation, characterization and evaluation: Micellar loaded complex of *Cuminum cyminum* to treat Respiratory Infection (RTI)

Background: Respiratory Infection (RTI) is a viral spreading disease and it transmits from individual to individual, particularly in youngsters and aged peoples. The treatments are available but have so many limitations. To treat RTI, the phyto-constituent antibacterial drug cuminaldehyde (*Cuminum cyminum L.*) was selected but it exhibits low bioavailability, poor water-solubility and is rapidly eliminated from the body.

Objectives: To overcome these issues, novel drug delivery (nanoparticle) based micellar loaded complex approach was adopted.

Methods: In this study, the Micellar (CM) was prepared by mixing of cuminaldehyde and soya lecithin using anti-solvent precipitation technique and further the Micellar Loaded Complex (CMLC) was prepared by loading of Micellar (CM) in aqueous solution of chitosan. The physical compatibility studies by DSC and FT-IR, demonstrated the confirmation of CMLC with soya lecithin and chitosan.

Results: The optimized CMLC and CM were irregular particle shapes and crystalline structures, with a mean particle size of 279.10±0.02 nm, 296.24±0.10 nm and zeta potential of -8.18 mV, -8.77 mV, respectively. The % entrapment efficiency and % drug loading of CMLC (72.13±0.26%, 06.46±0.01%) and CM (89.09±0.20%, 08.05±0.19%) was found efficiently. The in vitro release rate of CM (88.09±0.41%) was slower than CMLC (89.02±0.06%) in pH 7.4 phosphate buffer up to 24 h by diffusion process (Korsmeyer Peppas model).

Conclusion: Furthermore, CMLC has shown the potent in vitro antioxidant activity, susceptible antibacterial activity and significant anti-inflammatory activity as compared to CM against stress, microbial infection (*S. aureus and E. coli*) and inflammation which were causable reason for the respiratory infections. CLMC has shown the significant bioavailability and more efficient hematological parameters value on rabbit blood against the incubation of bacterial organism. CLMC may have the effective potential to treat causing disease of COVID 19 i.e. RTI.

Keywords: Respiratory Infection, Micellar Formation, Cuminaldehyde.

Biography

Dr. Rudra Pratap Singh Rajput completed Ph.D at JSSAHER, Mysuru (Karnataka) in 2018. Further, Rajput joined as Assistant Professor in Jeypore College of Pharmacy, Odisha in Aug, 2018 and continued his academic profession in Royal College of Pharmacy, Raipur (Chhattisgarh). Rajput has supervised 10 post graduation students to accomplish project dissertation work and supervising 3 PhD Scholars. Rajput has more than 33 publication in SCI(E) indexed reputed journals. Rajput also received an International Travel grant from ICMR, New Delhi to present his work on international platform. Rajput actively participated in various national and international conferences. At latest, he has organized successfully four different National conferences sponsored by Department of Biotechnology, New Delhi and AERB, Mumbai and BRNS Mumbai.

Dr. Santiago Fernandez Troitiño[1*], Dr. Matías Bochinfuso[1], Dr. Néstor Oscar Bustamante[1], Dra. Soledad Pilar Postma[1], Gabriela Chirino[2], Lucia Kaminszczik[2], Dr. Rohitashva Agrawal[3], Pranav Tandan[3], Adriana Vargas Roa[3], Daniela Cantor[3]

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Assisted incidental detection of cancerous lung nodule in Argentina: A case of adenosquamous carcinoma identified via chest X-ray AI and qTrack

Introduction: Lung cancer is the leading cause of cancer mortality globally, with most cases diagnosed at advanced stages. In Latin America, limited access to structured screening makes AI-integrated diagnostic tools a pragmatic pathway for early detection. qXR (Qure.ai) is a CE-marked, FDA-cleared deep learning algorithm for automated chest radiograph analysis for lung nodule. qTrack enables longitudinal nodule tracking and multidisciplinary coordination for pulmonary nodule management. We present a case where this AI workflow led to curative surgery for early-stage lung cancer in an Argentina.

Case Presentation: A 65-year old non-smoking woman presented to Hospital Córdoba for routine imaging. qXR flagged bilateral pulmonary nodules, with a dominant spiculated left upper lobe nodule requiring urgent follow-up; patient navigator used qTrack to coordinate next steps for nodule management.

PET-CT (November 2025) confirmed a hypermetabolic left upper lobe nodule (SUVmax 7, 18 mm, apicoposterior segment) and a second hypermetabolic right lower lobe nodule (SUV max 5, 14 mm), with no mediastinal nodal uptake. CT-guided biopsy (December 2025) demonstrated an invasive malignant epithelial neoplasm with marked nuclear atypia; immunohistochemistry (p63, TTF-1) indicated probable squamous cell carcinoma.

The patient underwent left upper lobectomy (March 2026). Final histopathology revealed poorly differentiated adenosquamous carcinoma G3 (2.1cm). Surgical resection margins were clear.

Discussion: qXR's detection of a high-suspicion nodule triggered a diagnostic cascade culminating in stage IA3 lung cancer resection with clear margins and node-negative disease. An outcome unlikely without AI prioritisation in a busy public hospital. Adenosquamous carcinoma represents <4% of all lung carcinomas and carries a worse prognosis than either pure subtype; the dual IHC profile (TTF-1+/p63+) confirmed mixed lineage. Despite the adverse prognostic significance of STAS, node-negative status and clear surgical margins confer a favourable outlook. qTrack was critical in preventing loss to follow-up across radiology, pulmonology, thoracic surgery, and pathology and ensuring the patient gets a curative surgery in time.

Conclusion: AI assisted chest radiograph analysis (qXR) for incidental nodule detection and nodule Tracking (qTrack) enabled curative resection of an early-stage adenosquamous lung carcinoma (pT1c pN0) in a non-smoking Argentine woman. This case supports the role of AI radiology tools in detecting incidental early stage lung cancers and reducing diagnostic delays to improve lung cancer outcomes in public health systems with limited health infrastructure.

Biography

Dr. Santiago Fernández Troitiño completed his training as a thoracic surgery resident at Hospital Córdoba, in Córdoba Province, Argentina. Santiago currently serves as Chief Resident at the same institution and has developed a strong interest in thoracic oncology and minimally invasive surgery. During his training, Santiago has been actively involved, alongside his mentors and peers, in the management of complex thoracic pathologies, including lung cancer, pleural diseases, and airway disorders. Santiago academic interests focus on lung cancer staging and surgical decision-making.

Dr. Santosh Kumar Mishra Ph. D

Independent Researcher (Scholar), Retired from Population Education Resource Centre, Department of Life Long Learning and Extension, S. N. D. T. Women's University, Mumbai, Maharashtra, India

Management of respiratory nursing care in France

The author of this research argues that respiratory nursing care is of upmost importance in overall health management. It gains increased significance in the present day world situation which is marked by increase in global warming-induced respiratory illness. It is for this reason that the Government of France has, as a part of modern health management, emphasized on addressing acute and chronic conditions [such as Chronic Obstructive Pulmonary Disease (COPD & asthma]. The goal of such initiatives is to improve quality of life of people.

This research work primarily aims to provide an insight into relevant aspects of management of respiratory nursing care in France (as case study). Secondary date (largely 'qualitative' in nature) have been used, and method of data analysis is 'descriptive', involving "desk-based research approach". Analysis of data indicates that France's management of respiratory nursing care in is highly structured. This institutional mechanism envisages multidisciplinary system that places increased emphasis on home-based care for chronic conditions. Health care system of this type is supported by a network of (a) Specialized associations; and (b) Rigorous, and evidence-based protocols. Key components of management of respiratory nursing care in France include:

Home-Based Respiratory Care: This aspect envisages:

Structure: Care is organized through a national network of 33 Regional Associations for home care of chronic respiratory.

Services: The Regional Associations provide installation, monitoring, and maintenance of respiratory equipment at home (with costs covered by social security).

Interventions: Key interventions include Long-Term Oxygen Therapy (LTOT), Home Mechanical Ventilation (HMV), and nasal Continuous Positive Airway Pressure (CPAP).

Multidisciplinary Approach: Respiratory care involves collaboration between specialists, nurses, and technicians.

2. Specialized Nursing and Clinical Care: This aspect envisages:

Rehabilitation: Programs are integrated into care plans, including smoking, nutritional support, and physical exercise training.

Education: Focus is on patient and family education to recognize warning signs.

3. Public Health and Infection Control: This aspect envisages:

Nursing Home Surveillance: There are strict protocols for managing Lower Respiratory Tract Infections (LRTI) in nursing homes.

Antibiotic Stewardship: Efforts are ongoing in order to reduce the overuse of antibiotics.

4. Education and Training: This aspect envisages:

Specialization: Respiratory therapists in France are specialized.

Training: Training programs focus on the management of chronic respiratory failure, specifically in the use of technical equipment.

Respiratory nursing care in France is considered a model for other countries due to its comprehensive, multi-sectoral, and patient-focused strategy. Notably, acute care includes pre-hospital care, organisation of emergency departments and availability of appropriate hospital beds.

This abstract briefly concludes that in France, specialized respiratory nurses play a critical role in preventing complications, particularly in vulnerable populations, by providing expert care, including airway clearance, oxygen therapy, and ventilator management. Improving respiratory nursing care needs to be central to health care systems of the country. The multidisciplinary system of respiratory nursing care manages nearly 65,000 patients with chronic respiratory failure at home. This is managed by integrating technical, social, and medical interventions with the purpose of improving survival.

Keywords: Respiratory Nursing Care, Management, France, Airway Clearance, Oxygen Therapy, Global Warming, Quality of Life, and Multidisciplinary System.

Biography

Dr. Santosh Kumar Mishra is Independent Researcher (Scholar), having retired from Population Education Resource Centre, Department of Lifelong Learning & Extension, S.N.D.T. Women's University, Mumbai, India. Mishra underwent training in demography & acquired Ph. D. Mishra has authored 6 booklets, 4 books, 31 book chapters, 109 journal articles, 2 monographs, 7 research studies, & 119 papers for national & international conferences (some with bursary). Mishra has been awarded with Certificate of Excellence in Reviewing in 2017, 2018, 2021, 2022, & 2024; and conferred with Excellence of Research Award for outstanding contribution & recognition in the field of agriculture in 2021.

Dr. Santosh Kumar Mishra Ph. D

Independent Researcher (Scholar): Retired from Population Education Resource Centre, Department of Life Long Learning and Extension, S. N. D. T. Women's University, Mumbai, Maharashtra, India

Emerging trends in global lung disease burden

Lung diseases [including Chronic Obstructive Pulmonary Disease (COPD), asthma, and lung cancer] are leading causes of death and chronic disability worldwide. Such health complications are often caused by (a) Smoking, (b) Infections, and (c) Exposure to extreme air pollution situations. What is of concern is that these serious conditions, which restrict oxygen delivery to the body, often progress silently in the body.

In this context, it is important to note that lung cancer is an important considerations in emerging trends in global lung disease burden. It is one of the leading causes of the global deaths caused by cancer-related complications. Medical doctors treating infectious diseases are of the view that global lung disease burden is determined by multiple contributing factors. Analysis of data over the past decades are indicative of the fact that age-standardized incidence and mortality rates have declined. However, the absolute number of cases has increased. Tobacco smoking has been found to be one of the most common risk factor.

This research work primarily aims to investigate into emerging trends in global lung disease burden. Secondary date (largely 'qualitative' in nature) have been used, and method of data analysis is 'descriptive', involving "desk-based research approach". Analysis of data indicates that the global burden of lung disease (particularly COPD) is increasing. This rising trend has come with the projection that cases may approach nearly 600 million by the year 2050. Notably, key trends include 23% surge in COPD cases. Presented below is description on key trends in global lung disease burden:

- **Chronic Obstructive Pulmonary Disease (COPD):** The absolute number of cases is rising, driven by population growth and aging. Demographic Shifts: The burden is shifting, with a projected 47.1% increase in female cases compared to a 9.4% increase for males by the year 2050.
- **Regional Disparities:** The burden is increasing rapidly in low-and middle-income regions.
- **Key Drivers & Risks:** Smoking and poor air quality are primary risk factors.
- **Other Respiratory Diseases:** Asthma affects over 350 million people.
- **Young COPD:** A significant increase in prevalence has been noted in younger populations, with 51.6% increase in cases from 1990 to 2021.

In conclusion, the author of this presentation states that age-standardized rates for Chronic Respiratory Diseases (CRDs) have declined. The absolute burden is expected to grow due to aging populations. Air pollution & smoking persistently influenced COPD, kidney infection and asthma prevalence (across regions and sexes).

Keywords: Global Health, Burden, Respiratory Disease Burden, Chronic Obstructive Pulmonary Disease (COPD), Asthma, and Lung Cancer.

Biography

Dr. Santosh Kumar Mishra is Independent Researcher (Scholar), having retired from Population Education Resource Centre, Department of Lifelong Learning & Extension, S.N.D.T. Women's University, Mumbai, India. Mishra underwent training in demography & acquired Ph. D. Mishra has authored 6 booklets, 4 books, 31 book chapters, 109 journal articles, 2 monographs, 7 research studies, & 119 papers for national & international conferences (some with bursary). Mishra has been awarded with Certificate of Excellence in Reviewing in 2017, 2018, 2021, 2022, & 2024; and conferred with Excellence of Research Award for outstanding contribution & recognition in the field of agriculture in 2021.

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Personalized and Precision Oncology (PPO) to be set up via precision oncology strategy for cancer care team: Developing targeted lung cancer therapy and advancing personalized cancer care

Lung cancer is one of the leading causes of cancer death among both men and women, making up almost 25% of all cancer deaths. A comprehensive molecular tumor analysis integrating a combination of NGS methods offers the best chance for personalizing cancer care, enlarging the scope of therapy choices and offering potential new options for challenging cases, for instance metastatic tumors, rare cancer types, and cancers of unknown primary. Cutting-edge bioinformatics pipelines integrate the multiple data levels to construct big data and da-

ta sets and to generate a personalized tumor report. One key asset of this solution is the use of whole transcriptome data as a booster enhancing the sensitivity and information content of the diagnostic, predictive and prognostic tests. Up to now personalized and precision oncology has been largely relying on identifying key mutations in the tumor DNA by means of panel sequencing, a method scanning only designated cancer gene targets. Though the panel approach helps to orientate therapy choices for particular cancer types, many "hard to treat" tumors remain in need of more effective diagnostic solutions.

PPM offers a transformative solution by tailoring screening protocols to individual risk profiles through the integration of clinical, genetic, environmental, and radiological data. Emerging tools, such as risk prediction models, radiomics, bioinformatics, and liquid biopsies, enhance the accuracy of screening, allowing for the identification of high-risk individuals who may not meet conventional criteria. Polygenic Risk Scores (PRSs) and molecular biomarkers further refine stratification, enabling more personalized and effective screening intervals. Incorporating these innovations into clinical workflows, alongside Shared Decision-Making (SDM) and robust data infrastructure, represents a paradigm shift in lung cancer prevention to secure the health of pre-cancer persons-at-risk. The identification of novel biomarkers that could be used in pre-early (subclinical) diagnosis is urgently needed, especially for guiding initial therapy and predicting relapse or drug resistance following the administration of novel targeted therapies.

Meanwhile, personalized treatment choices, especially for Non-Small Cell Lung Cancer (NSCLC), the most common type, require careful consideration of the tumor's genetic profile. NSCLC's high mutational load makes NGS and GWAS testing essential for identifying mutations and selecting targeted therapies. Recent advances have identified key genetic muta-tions that drive tumor growth, including those in the EGFR, KRAS, ALK, and MET genes, accounting for around 80 % of NSCLC. The advent of targeted therapies such as TKIs and monoclonal Antibodies (Abs), have revolutionized cancer treatment by specifically inhibiting oncogenic pathway. However, despite those advancements, treatment outcomes remain suboptimal due to intrinsic heterogeneity of cancers and the development of resistance mechanisms.

Even with remarkable achievement in the management of lung cancer, especially NSCLC, problems persevere in achieving prolonged remission and enhancing overall survival. Tumor complexity and acquired resistance mechanisms generally hinders the efficiency of these treatment strategies, resulting to disease progression. Customization of cancer therapies through pharmacogenomics is hindered by tumor adapatability and resistance, limited prognostic biomarkers and suboptimal monotherapies. The latter necessitates biomarker development and combination therapies. In general, physicians and cancer experts encounter an immense number of challenges in providing the optimal treatment regimen for the individual given the sheer complexity of clinical aspects such as tumor molecular profile, tumor microenvironment, expected adverse events, acquired or inherent resistance mechanisms, the development of metastases, the limited availability of biomarkers and the choice of combination therapy.

Currently, all patients with suspicious lung cancer and non-smokers with other histologies should be tested for EGFR mutations, ALK rearrangements and ROS1 fusion. For instance, when harbouring an EGFR sensitising mutation, ALK or ROS1 rearrangements or BRAF mutations, patients with advanced NSCLC will receive bioguided therapy as first-line treatment (i.e. gefinitib, erlotinib or afatinib) or ALK/ROS1 TKI (crizotinib) or BRAF inhibitors (dabraf-enib and trametinib), respectively.

In this context, along with the above-mentioned, theranostics is an innovative concept of personalized therapy that focuses on both the accurate selection of lung cancer patients and providing them with targeted radioligand cancer therapy to improve their prognosis. The integrated value chain of PPM-related oncology tools equips theranostics programs with state-of-the-art solutions at every step of the theranostics care pathway.

PPM has the potential to tailor therapy towards the oncogenic drivers of the lung tumor and modulate the tumor immune environment, whilst aiming to optimize tumor response and thereby taking into account the therapy-induced toxicities for each specific patient.

Lung cancer is no longer considered a single disease entity and is now being subdivided into molecular subtypes with dedicated targeted and chemotherapeutic strategies. Given the heterogeneity and complexity of lung cancer treatment with respect to histology, tumor stage, and genomic characterization, mind mapping has been developed as one of many tools, which can assist physicians in this era of PPM.

Nowadays, taking into account the presence of different genetic changes in cancer patients or pre-cancer persons-at-risk, we would aim at making the need for PPO much greater to get the lung cancer patients cured! In this context, functioning approach named Cancer Care Team or Trans-Disciplinary Care Team, clinical practice and process, evidence-based decision making, and smart targeted therapies are becoming crucial! The latter integrates multidisciplinary experts and develops real-time therapeutic strategy based on clinical phenomes and translational genomics and related OMICS technologies. That approach provides comprehensive, whole-process, and personalized diagnosis and treatment services for patients with complex lung cancer or complex drug resistance progression; provides guidance for further adjustment of drug use; and establishes a multidisciplinary cooperative team, improves the quality of clinical diagnosis and treatment, and optimizes the process of medical services.

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and was awarded with MD. In 1985, Suchkov maintained his PhD as a PhD student of the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology. In 2001, Suchkov maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, Dr. Suchkov was being a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004-a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, Dr. Suchkov was a Secretary-in-

Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At present, Dr. Sergey Suchkov, MD, PhD, is: Director for Center of Biodesign of N.D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Moscow, Russia. Senior Scientific Advisor of China Hong Kong Innovation International Business Association, Hong Kong. R&D Director of InMedStar, Russia. Member of the: Russian Academy of Natural Sciences, Moscow, Russia. New York Academy of Sciences, USA. American Chemical Society (ACS), USA. American Heart Association (AHA), USA. European Association for Medical Education (AMEE), Dundee, UK. EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU. ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research). Personalized Medicine Coalition (PMC), Washington, DC, USA.

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The promise of nanotechnology in Personalized & Precision Pulmonology (PPP): Lung bioengineering and clinical translation in PPP-guided practice

Despite breakthroughs in designed-driven research that have led to an increased understanding of PPM-based disease, the translation of discoveries into therapies for pulmonary patients and pre-illness persons-at-risk has not kept pace with medical need. Biodesigners, biotechnologists and biomanufacturers are beginning to realize the promise of PPM, translating to direct benefit to patients or persons-at-risk.

While there have been various therapies attempted to reconstruct the lung and segmental trachea, such as transplantation, direct anastomosis, suboptimal laser treatment, stenting, autografting, and allografting, none have provided an ultimate solution. Though achieving lung regeneration, in controlled environments is still an ambition; ongoing studies are concentrating on notable progress, in the field of lung tissue engineering and methods for repairing lung damage, including exosome carry bioscaffolds and stem cells to repair lung tissue and improve lung function in cases of damage. As well as, Ex Vivo Lung Perfusion (EVLP) for rejuvenating donor lungs and the healing properties of exosomes in supporting lung regeneration.

Various tissue engineering techniques have emerged as a promising strategy to develop functional, biomimetic constructs that avoid the need for long-term transplantation or immunosuppression. In this context, the development of bioartificial lung grafts using individualized patient-derived cells or 3D-bioprinting, that have shown promise in mimicking intricate tissue structures, might serve as alternative treatment modalities. Both biologically derived and manufactured scaffolds seeded with cells and grown ex vivo, have been explored in preclinical studies, with the eventual goal of generating functional pulmonary tissue for transplantation. Concomitantly, there have been exciting efforts in designing bioreactors that al-low for appropriate cell seeding and development of functional lung tissue over time. However, challenges include developing appropriate scaffold materials, advanced culture strategies for lung-specific multiple cell populations, and fully matured constructs to ensure increased transplant lifetime following implantation. The development of physiologically-relevant artificial tissue models for testing novel therapies represents an important step toward finding a definite clinical solution for different chronic respiratory diseases.

One of the greatest barriers to the generation of an ideal bioengineered lung is surely the complexity and unique architecture of the organ itself. Without knowing and understanding the precise control and direct angiogenesis of creating intricate pulmonary vasculature, development in lung tissue engineering could not be able to move forward and to translate preclinical studies to clinical practice.

In this context, biodesign has created an impact globally in the ecology by preventing the ecological imbalance, creating an impact on the psychological behaviour of humans by boosting their confidence and thus influencing one's behaviour. Biodesign is a powerful tool to cater the current problems associated with the environment, healthcare, wildlife, bioarchitecture, and surgical procedures. The use of biodesign in designing artificial pulmonary organs and segments has increased to by extending its arms to the different fields associated with the daily life of humans.

Both PPM and nanobiotechnologies are new to medical practice, which are being integrated into diagnostic and therapeutic tools to manage an array of medical conditions in pulmonary practice.

Nanobiotechnology and nanoscience can provide innovative techniques to deliver drugs targeted to the site of inflamed lungs. For instance, nanoparticles and nanocarriers have been developed to overcome the limitations of free therapeutics and navigate biological barriers-

systemic, microenvironmental and cellular-that are heterogeneous across pulmonary patient populations and diseases. Overcoming this patient heterogeneity has also been accomplished through precision and nanodrug-based therapeutics, in which personalized interventions have enhanced therapeutic efficacy. For instance, nanoparticles designed to release antibiotics deep inside the lungs reduced inflammation and improved lung function in mice with symptoms of chronic obstructive pulmonary disease. Some of the widely used nano-carriers for the treatment of chronic pulmonary diseases, via pulmonary route, are as follows: Polymeric nanoparticles, liposomal nano-carriers, solid lipid nanoparticles, and submicron emulsions. Nano-carrier systems provide the advantage of sustained-drug release in the lung tissue resulting in reduced dosing frequency and improved patient compliance. The recent cutting-edge approaches such as nanoparticle-mediated combination therapies, novel double-targeted nondrug delivery system for targeting, stimuli-responsive nanoparticles, and theranostic imaging in the diagnosis and treatment of pulmonary diseases are becoming highly promising! Further development of nano-sized carriers including nanoparticles, or liposomes holds great potential for diagnosis and advanced delivery systems for immunomodulation in respiratory diseases; however, translational studies are urgently needed to validate the use of nanotechnology for clinical applications.

Advancements in nanobiomedicine have played a crucial role in driving the PPM-guided revolution and PPP-related practice. With the ability to engineer and manipulate materials at the nanoscale, biodesigners have been able to develop innovative solutions for diagnostics, drug delivery, and imaging as applicable to pulmonary and lung cancer practice. The Grand Change and Challenge to secure our Health and Wellness are rooted not in Medicine, and not even in Science! Just imagine WHERE?! In the upgraded Hi-Tech Culture!

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and was awarded with MD. In 1985, Suchkov maintained his PhD as a PhD student of the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology. In 2001, Suchkov maintained his Doctor Degree at the National Institute of Immunology, Russia. From 1989 through 1995, Dr. Suchkov was being a Head of the Lab of Clinical Immunology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004-a Chair of the Dept for Clinical Immunology, Moscow Clinical Research Institute (MONIKI). In 1993-1996, Dr. Suchkov was a Secretary-in-Chief of the Editorial Board, Biomedical Science, an international journal published jointly by the USSR Academy of Sciences and the Royal Society of Chemistry, UK. At present, Dr. Sergey Suchkov MD, PhD, is: Director for Center of Biodesign of N. D. Zelinskii Institute for Organic Chemistry of the Russian Academy of Sciences, Moscow, Russia. Senior Scientific Advisor of China Hong Kong Innovation International Business Association, Hong Kong. R&D Director of InMedStar, Russia. Member of the: Russian Academy of Natural Sciences, Moscow, Russia. New York Academy of Sciences, USA. American Chemical Society (ACS), USA. American Heart Association (AHA), USA. European Association for Medical Education (AMEE), Dundee, UK. EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU. ARVO (American Association for Research in Vision and Ophthalmology); ISER (International Society for Eye Research). Personalized Medicine Coalition (PMC), Washington, DC, USA.

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Unexpected pulmonary cryptococcosis in an immunocompetent individual: Case report and clinical analysis

Pulmonary cryptococcosis in immunocompetent individuals represents an underestimated diagnostic and therapeutic challenge, with growing relevance in clinical practice and global public health. Although historically associated with advanced immunosuppression—particularly HIV infection, solid organ transplantation, or prolonged corticosteroid use—cases are increasingly reported in patients without apparent risk factors, especially when related to *Cryptococcus gattii,* an emerging pathogen with a distinct epidemiological profile.

We present the case of a 73-year-old immunocompetent man from northern Mexico with a three- year history of chronic cough, significant weight loss, mild hemoptysis, and constitutional symptoms, initially interpreted as chronic inflammatory lung disease or possible pulmonary neoplasm. Chest CT revealed mediastinal lymphadenopathy and irregular consolidation, raising strong suspicion for malignancy. Bronchoscopy demonstrated grade III endobronchial infiltration, and multiple biopsies were required to establish the definitive diagnosis of pulmonary cryptococcosis. Serologies for HIV, HBV, HCV, and syphilis were negative, and the patient had no history of immunosuppression, recent travel, or high-risk exposures other than environmental contact with pigeons. CT imaging reported a lymph node conglomerate up to five centimeters in stations 2R and 4R, associated with an irregular area with air bronchogram in the right upper lobe. Bronchoscopy revealed grade II and III mucosal infiltrations, anthracotic mucosa, and extrinsic compression in segmental bronchi. Bronchial lavage cytology showed nonspecific inflammatory changes; however, endobronchial biopsies confirmed cryptococcosis, prompting antifungal therapy initiation.

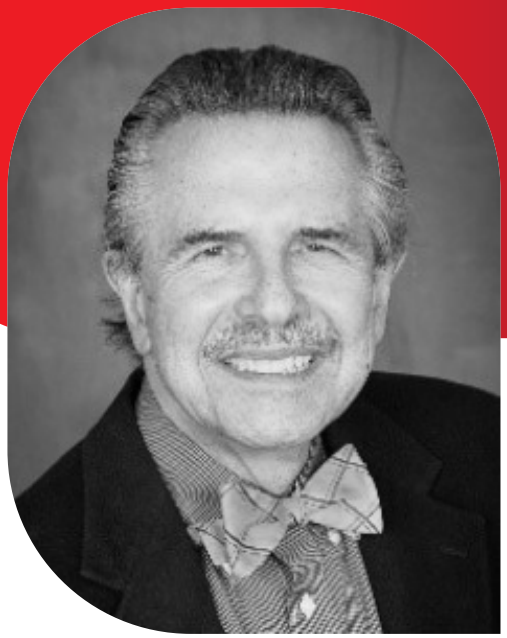
This case highlights the global diagnostic challenge of pulmonary cryptococcosis in immunocompetent hosts. The disease can mimic tuberculosis, lung cancer, sarcoidosis, and other chronic granulomatous processes. Diagnostic delays are common due to nonspecific symptoms, variability in radiologic findings, and low clinical suspicion in non-endemic regions. In this patient, deep endobronchial biopsies were essential to differentiate fungal infection from malignancy given the extent of mucosal infiltration.

Therapeutic decision-making in this context is also complex. Although mild to moderate pulmonary cryptococcosis is typically managed with fluconazole, the persistence of hemoptysis, severe endobronchial involvement, and radiologic burden justified induction therapy with amphotericin B deoxycholate followed by high-dose fluconazole. This reflects the limitations of current guidelines—largely derived from immunocompromised populations—which offer limited precision for extensive endobronchial disease in immunocompetent hosts.

Beyond the individual case, this report addresses emerging epidemiological concerns: The geographic expansion of *C. gattii* as a primary pathogen, environmental changes altering fungal distribution, and the need to strengthen mycological surveillance in regions previously considered low risk. Clear opportunities exist to improve care through enhanced clinician awareness, early incorporation of fungal diagnostics in chronic pulmonary syndromes, standardization of therapeutic algorithms, and expansion of diagnostic capacity in resource-limited healthcare systems.

Biography

Dr. Sergio Silvestre Soto Sánchez is a third-year Internal Medicine Resident at the General Hospital of Zone No. 33 of the Mexican Social Security Institute (IMSS) in Monterrey, Nuevo León, Mexico. Soto Sánchez obtained his medical degree from the Universidad Autónoma de Baja California. Soto Sánchez clinical and academic interests focus on infectious diseases, particularly the epidemiology, diagnosis, and resistance mechanisms of pathogens relevant to northern Mexico. Dr. Soto Sánchez actively participates in research initiatives within his medical unit, promoting the integration of evidence-based infectious disease practices and antimicrobial stewardship into everyday clinical care. Soto Sánchez is committed to strengthening regional infectious disease research and enhancing public health responses through early recognition, timely diagnosis, and multidisciplinary collaboration. Dr. Soto Sánchez aims to contribute to the development of local and national strategies addressing emerging infections and improving healthcare outcomes in Mexico.



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Is Small Airway Dysfunction (SAD) common and an exacerbation risk biomarker in the well-controlled asthmatic?

Rationale and Aims of Study: Recent surveys suggest that over 50% of adult asthmatics remain uncontrolled despite guideline-based standard therapy. As a potential cause SAD is often under-recognized as a major site of airway obstruction and inflammation related to the lack of assessment with current tools, like Impulse Oscillometry (IOS), thus under-treatment may explain inadequate control. The aims of our study were to investigate whether SAD is present in patients with well-controlled asthma, and, if so, whether SAD is a risk factor for future exacerbations in this phenotype.

Methods: This observational ATLANTIS study included 773 extensively characterized asthmatics, with SAD assessed by IOS at baseline and 90 controls, with exacerbations monitored longitudinally over a 12-month observation period. Well-controlled asthma was defined as an ACQ-6 score of <0.75 at baseline, SAD was defined by R5-20 and/or AX by Z score values of +>1.645 RSD, and/or X5 Z scores values of -<1.645 RSD.

Results: SAD was present in 30-40% of well-controlled patients with asthma. In the multivariate analysis, we found that R5-20 defined SAD was associated with increased risk of future exacerbations, independent of age, male sex, smoking habits, GINA Step 4-5, previous exacerbations, peripheral blood eosinophilia, and FEV1% predicted, with a hazard ratio of 2.31 (95% CI is 1.10-4.88), P=0.028.

Conclusion: We have addressed an undervalued and frequently under-recognized treatable trait by showing that SAD is a common, sensitive, early independent biomarker for exacerbation risk in well-controlled asthma. Early risk recognition of this phenotype, and appropriate therapy with extrafine inhaled corticosteroids has the potential to prevent such asthma morbidities, and long term lung function loss.

Biography

Dr. Galant is a Clinical Professor of Pediatrics at the University of California, Irvine. Galant received his MD from UCSF, completed pediatric training at UCSF and Children's Hospital of Los Angeles, served as a pediatrician in the U.S. Army, and completed an Allergy and Immunology fellowship at UCSF. Galant directed Pediatric Allergy and Immunology at UCI and later the CHOC Breathmobile. An NIH awardee, Galant has authored 156 peer-reviewed publications, including landmark studies in NEJM and Lancet Respiratory Medicine.

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Environmental Health Impact Assessment (EHIA) process of pulmonary disorders and lung health, stomach health and dermal health due to Respirable Suspended Particulate Matter (RSPM) less than ten microns in source specific, specific industrial and generic environment

Investigations are recorded for the Environmental Health Impact Assessment (EHIA) process for the pulmonary disorders and lung health, stomach health and dermal health (three axis) due to respirable suspended particulate matter less than ten microns in source specific, specific industrial and generic environment. Environmental toxicological experiments conducted that Respirable Particulate Matter (RSPM) smaller than 1 micron consisting of heavy metals, dust-producing grinding dust particles, Polycyclic Aromatic Hydrocarbons, (PAHs) and organic compounds that Cause DNA and RNA damage, induce inflammation and causes the growth of cancer cell and tumor promotion causing effects on naturally occurring mutations in three routes. The particulate matter in the order of nanoparticles causes significant health environmental health hazards. Diesel and petrol exhaust gases, industrial emissions, indoor level cooking and burning of fuels, long term exposures to cigarette smoking gases, and other ultra fine particles and their test results are provided. Respirable Particulate Matter (RSPM) smaller than 1 micron (PM1), a kind of air pollution, causes a high risk for pulmonary disorders because these particles can penetrate deep into the lungs, stomach and dermal root entering the blood stream through the alveoli and circulation over the body internally and externally. It has ability and efficacy to induce chronic inflammation. Based on the tests it is concluded that national and international policies on environmental public health should be enacted for each country in the World by the policy makers and planning and decision-making authorities for the sustainable development.

Keywords: Health, Policy, Respirable, Efficiency.

Biography

Dr. Vijayan Gurumurthy Iyer (b. 10 June 1964, Mayuram, India) is a distinguished engineer, academic, and consultant with over 40 years of experience in mechanical engineering, environmental science, and higher education. Iyer is Director of Techno-Economic-Environmental Study and Check Consultancy Services in Chennai. Iyer holds multiple qualifications, including AMIE (Mechanical), BGL, PhD (Environmental Science & Engineering), and several honorary doctorates. Iyer has served as Professor, Dean, and Principal at premier institutions such as KLEF University, CRPF Technical Institute, and Narasaraopeta Engineering College, and was a postdoctoral researcher at WSEAS, Greece. Dr. Iyer has authored 470+ SCI/ISI-indexed papers, 60 eBooks, and has over 7450 citations (h-index: 70). Iyer serves on editorial boards for leading journals and has been recognized with national and international awards including Bharat Jyothi and Rashtriya Gaurav. A Fellow of IEI and member of several global bodies, he remains active in research, policy, and professional consultancy.

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Film scaffolds for tissue engineering in pulmonology, respiratory medicine and lung health

3D bioprinting has enormous potential for medicine. This new technology could significantly improve treatment of the lungs and lower respiratory tract by testing treatments on "organism-on-a-chip" biomodels of individual patients. Personalized respiratory medicine will become possible with the simultaneous testing of multiple treatment methods and drugs, identifying the most effective with minimal toxicity. In the future, it will be possible to manufacture not only patches, but also entire organs without rejection (bronchi, trachea). A biodegradable film material has been developed for the production of porous scaffolds similar to lattice structures for rapid 3D bioprinting with the ability to be laser perforated, with a hole size of ~60-100μm and boundaries of ~20-45μm respectively, ensuring almost 100% cell viability. Performance acceleration occurs due to the use of a ready-made scaffold without stereolithographic solidify and extrusion. Time is spent only on perforating holes for follicles, channels for transporting fluid, nutrients and oxygen to cells, instead of creating the entire scaffold layer. The created organoids unites the biocompatibility of hydrogels and the strength of polymers, using a combination of biodegradable framework materials. These films can be used not only for breakthrough Roll Porous Scaffold (RPS) 3D bioprinting technology with performance >1.7 L per hour at a layer thickness of 18μm, but also to significantly accelerate the operation of traditional extrusion, laser and inkjet bioprinters.

Biography

Vyacheslav Shulunov is a researcher at the Institute of Physical Materials, Siberian Branch of the Russian Academy of Sciences. Vyacheslav is the author of a breakthrough innovative bioprinting technology Roll Porous Scaffold, holds 23 Russian Federation patents, 5 state registration certificates for software, and has 13 publications in Web of Science and Scopus journals. Vyacheslav's research interests are aimed at accelerating the advent of a new scientific and technological revolution to improve and save human lives.

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Brugada Syndrome (BrS) in Pulmonary Embolism (PE) extremely rare presentation with gradual disappearance despite later conversions (Yasser's conversions) and Yasser's coving sign post-COVID-19 pneumonia: New discoveries - A case report

Introduction: Brugada Syndrome (BrS) is an uncommon genetic disorder responsible for 4-12% SCDs due to ventricular fibrillation. Brugada Phenocopy (BrP) is a category of clinically diverse entities causing identical Brugada-like electrocardiographic patterns to actual Brugada Syndrome (BrS). Till now, there has been no ECG decision, even with the application of the new criteria in differentiation between BrS and BrP. Acute Pulmonary Embolism (PE) is a known serious cardiovascular and respiratory disease. A scarce report supporting Brugada syndrome post-acute respiratory SARS-CoV-2 (COVID-19) infection has been recorded.

Case presentation: A 43-year-old, golden-furniture painter, married male Egyptian heavy smoker patient was admitted to the hospital with pleural chest pain, fever, tachypnea, and tachycardia. He was managed in the ICU for pulmonary embolism, Brugada syndrome, and pneumonia.

Conclusion: Acute pulmonary embolism is a new, rare presentation and sequel of Brugada syndrome. conversions (Yasser's conversions) from Brugada syndrome type 1 to mixed type with right reversal post-COVID-19 pneumonia and acute pulmonary embolism is an innovative finding. The coving radiological sign (Yasser's coving sign) is also a new radiological sign that is parallel to the electrocardiographic coving configuration of Brugada syndrome. Fever is a predisposing factor and an ominous sign for Brugada syndrome. Brugada syndrome and acute pulmonary embolism are a new description of post-COVID-19 pneumonia.

Biography

Dr. Yasser Mohammed Hassanain Elsayed is a scientist, critical care physician, cardiologist, and independent researcher at the Ministry of Health in Egypt. Yasser has (157) publicized articles with (31) Innovations. They included (5) "Yasser's sign", (8) "Yasser's phenomenon", (1) "Yasser's modification", (2) "Yasser's maneuver", (1) "Yasser's method", (1) "Yasser's test", (6) "Yasser's syndrome", (1) "Yasser's fibrillation", (1) "Yasser's Procedure", (1) Yasser's ECG palpitations wave, (1) Factitious Yasser's Infarction, (1) "Yasser's Criterion"", (1) "Yasser's Conversions", and (1) "Amiodarone off-phenomenon. He was an international speaker in (42) Conferences, (7) Keynote speaker, reviewed (more than 345 articles), was an honorable editor for (275) Journals, (13) Conferences, OCM, and was an instructor in (15) official and (135) non-official training. Yasser has (53) COVID-19 publicized articles; He was nominated for big prizes such as the Breakthrough Prize, the Einstein Prize, etc. Yasser gained (more than 191) excellence certificates.

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POSTER PRESENTATIONS

Au Cheuk Tung*, Lun Cheuk Ying, Yu Kin Hei, Ho Sam Tim, Kei Cheuk Hei, Wong Yau Long, Mr. Wong Chun Ho Eyckle, Dr. Kwan Lai Chu Rachel
School of Medical and Health Sciences, Tung Wah College, Hong Kong

Utilising Diaphragm Ultrasound (DUS) to investigate correlation between Skeletal Muscle Mass (SMM) and diaphragm thickness

Diaphragm Ultrasound (DUS) has tremendous clinical value due to its non-invasive nature. Previous studies showed significant differences in diaphragm thickness between gender. However, the relationship between diaphragm thickness and Skeletal Muscle Mass (SMM) has not been established in healthy subjects. Sixty-three subjects (33 males, 30 females; aged 22.14 ± 3.41) were recruited to perform body composition analysis. Ultrasound imaging were performed during Quiet Breathing (QB) and Deep Breathing (DB) to investigate the diaphragm thickness. Pearson correlation was performed to investigate the relationship between SMM and diaphragmatic ultrasound findings. For QB, mean diaphragm thickness during inspiration is 2.43 mm ± 0.82 and expiration is 1.92 mm ± 0.61. For DB, mean diaphragm thickness during inspiration is 4.30 mm ± 1.05 and expiration is 2.11mm ± 0.56. There is moderate correlation between SMM and diaphragm thickness during deep breathing inspiration (range of r=0.30-0.55, all $p<0.05$). This study demonstrated the diaphragm thickness was thicker in those with heavier skeletal muscle mass. The diaphragm thickness can be accurately measured and may be a useful indicator clinically.

Biography

Au Cheuk Tung is an undergraduate physiotherapy major at Tung Wah College, Hong Kong. Au Cheuk primary academic interest is improving cardiopulmonary rehabilitation protocols in public health settings.

Wong Yau Long is a Year 4 Bachelor of Science (Honours) in Physiotherapy student at Tung Wah College. Wong clinical training includes musculoskeletal, neurological, cardiopulmonary, and community outreach placements across hospital and rehabilitation settings. Wong has developed experience in patient assessment, evidence-based rehabilitation, respiratory physiotherapy, and neurological rehabilitation. Wong's research interests include cardiorespiratory physiotherapy, inspiratory muscle performance, and diaphragmatic ultrasound imaging. Wong is committed to patient-centred care, interdisciplinary collaboration, and continuous professional development within the physiotherapy profession.

Yu Kin Hei (Kenny) is an accomplished researcher and final-year BSc in Physiotherapy student at Tung Wah College, holding an MSc in Sports Science and Physical Activity from The Chinese University of Hong Kong (Dean's List). A multiple scholarship recipient and award-winning student, Yu integrates robust clinical expertise across cardiopulmonary care, intensive care units (PICU/NICU), and neurological rehabilitation with active research experience in wearable rehabilitation technologies. This pilot study leverages Yu's advanced background in sports science and specialized clinical training to pioneer the integration of diaphragmatic ultrasound imaging with traditional respiratory metrics, advancing non-invasive diagnostic capabilities in respiratory physiotherapy.

Lun Cheuk Ying is a final-year physiotherapy student with an interest in the cardiorespiratory field. Throughout her academic career, Lun has participated in various clinical placements, aiming to enhance the quality of life for individuals with respiratory conditions. Lun aspires to contribute to the field of physiotherapy by promoting the incorporation of new technologies in rehabilitation.

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Respiratory and spirometric findings among individuals exposed to different residential radon levels in California, Santander

Introduction: Radon is a radioactive gas and a well-established risk factor for lung cancer. However, its association with respiratory symptoms and pulmonary functional abnormalities in populations with chronic environmental exposure remains incompletely characterized. In the municipality of California, Santander (Colombia), elevated levels of residential radon have been documented in a mining community exposed to multiple respiratory risk factors.

Objectives: To explore clinical respiratory and spirometric findings in a mining population with high exposure to radon, wood-smoke, and tobacco.

Materials and Methods: A cross-sectional study was conducted to characterize respiratory findings in La Baja, a locality within the municipality of California (Santander). The target population included 110 residents aged ≥18 years. Sociodemographic information was collected through household visits, including sex, age, and current and previous occupations, with particular emphasis on mining activities. Participants completed the Spanish version of the Ferris respiratory symptoms and risk factors questionnaire, with additional questions addressing exposure to wood smoke.

A clinical examination was performed with emphasis on pulmonary auscultation. Pre- and post-bronchodilator spirometry was conducted using 200µg of inhaled salbutamol with a portable spirometer, following American Thoracic Society recommendations. Residential radon exposure was estimated through indoor household measurements. Associations between exposure variables, respiratory symptoms, and spirometric abnormalities were assessed using logistic regression models.

Results: A total of 110 participants were included, of whom 105 had interpretable spirometry. The mean age was 45.6 years (SD 15.3). The mean duration of residence in La Baja was 23.3 years (SD 19.9). Habitual cough was reported by 25% of participants, of whom 48% corresponded to chronic cough. Undiagnosed asthma was identified in 15% of participants. COPD was present in 9% based on clinical diagnosis and in 7.6% according to spirometric criteria.

Exposure to cigarette smoke was reported in 46% of participants, wood-smoke exposure in 70%, and 72% of the population reported employment in mining. Additionally, 61.8% reported occupational exposure to dust, and 37.3% presented clinically significant dyspnea (mMRC≥1). Abnormal spirometry was observed in 10.5% of participants, and bronchodilator reversibility was present in 8.7%.

Pulmonary auscultation abnormalities were found in 50% of participants, with fine crackles accounting for 54% of these findings. In the univariate analysis for dyspnea (mMRC≥1), an association was observed with longer duration of residence in the community (OR 1.025; 95% CI 1.005–1.046; p=0.014), as well as a trend toward association with occupational dust exposure (OR 2.225; 95% CI 0.962–5.143; p=0.061).

Conclusions: Multiple environmental and occupational exposures converge in the community of La Baja. The observed association between longer duration of residence and dyspnea may reflect cumulative effects of radon exposure and other respiratory risk factors. Additionally, the migration of ill individuals toward urban areas suggests the presence of a potential bias similar to the healthy worker effect.

Biography

Cristian O. Henao-Niño is an Internal Medicine resident at the Universidad Industrial de Santander (Bucaramanga, Colombia). Cristian academic interests focus on clinical epidemiology, environmental health, and particularly respiratory diseases. Cristian academic work has explored the effects of environmental exposures such as radon on respiratory health. In the future, he aspires to pursue further training as a specialist in Pulmonology.

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Diagnostic values of Fraction Exhaled Nitric Oxide (FeNO) and correlation between FeNO and FEV1 in asthma patients

Background: The absence of airflow limitation in spirometry is common in asthma. The Methacholine Challenge Test (MCT) is often necessary for the diagnosis of asthma, but it is usually performed in secondary or tertiary hospitals. Fraction exhaled Nitric Oxide (FeNO) is an eosinophilic airway inflammation marker, and its measurement is simple, rapid, convenient, and can be easily performed in primary care. We aimed to investigate the sensitivity and specificity of FeNO, allergosorbent test, and serum Immunoglobulin E (IgE) level in the diagnosis of asthma and we also investigate the correlation between FeNO and FEV1 in asthma patients.

Patients and Methods: In this retrospective analysis, we analyzed 98 asthma patients who were diagnosed with MCT and treated between January 1, 2022, and December 31, 2024. All patients underwent FeNO measurement, allergosorbent test, and serum IgE level before MCT to aid in the diagnosis and management of asthma. We evaluated the sensitivity and specificity of the markers, which included elevated FeNO (>25 ppb), positive allergosorbent test (at least one allergen is positive), and high serum IgE level (>100 IU/mL), in the diagnosis of asthma. We also investigate the correlation between FeNO and FEV1.

Results: In MCT positive asthma patients, combination of elevated FeNO and positive allergosorbent test, the sensitivity and specificity of asthma diagnosis were 0.57 and 0.85, respectively. In MCT positive asthma patients with elevated FeNO and high serum IgE level, the sensitivity and specificity were 0.46 and 0.79, respectively. In MCT positive asthma patients with elevated FeNO, positive allergosorbent test, and high serum IgE level, the sensitivity and specificity were 0.48 and 0.91, respectively. There was no significant correlation between FeNO and FEV1, however, a significant negative correlation was found between the changes in FeNO and the changes in FEV1 during follow-up tests (r=0.19; p=0.02).

Conclusions: The combination of FeNO, allergosorbent test, and serum IgE level may be useful diagnostic tools in patients with asthma. There is a tendency for FEV1 to increase when FeNO decrease. These results may indicate that monitoring FeNO can help predict changes in FEV1 in asthma management and this correlation could be useful in assessing the condition of asthma patients and determining treatment strategies."

Biography

Dr. Dae Sung Hyun is a Korean physician, graduated medical school, Kyungpook National University in South Korea. Dae Sung has completed research fellowship at University of Colorado Health Sciences Center (UCHSC) in United States. Dae Sung currently serves in Pulmonary Division at Daegu Catholic University Medical Center in South Korea.

Dr. Davinder Kundra[1*], Dr. Nilesh Dharulkar[2], Dr. Yougesh agh[3], Dr. Girish Kadam[4], Dr. Abrez Saulat[5], Dr. Roshan Singh Rathore[6], Dr. Gundappa Yarashi[7], Dr. Sumit Sethi[8], Dr. Harsh Mittal[9], Dr. Mahender Mittal[10]

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Clinical applications of N-Acetylcysteine (NAC): Evidence-based consensus statements from the Indian working group

Introduction: N-Acetylcysteine (NAC) has mucolytic and antioxidant properties, resulting in wide clinical use. Thus, the working group reviewed the literature to reach a consensus regarding the use of NAC across the spectrum of indications.

Materials and Methods: The working group comprised of 42 physicians from all over India. We developed, debated, ranked, and noted the recommendations for ten statements based on the available literature. The group members were asked to score the statements on a 5-point Likert scale, where 1 represented "strongly disagree" and 5 represented "strongly agree." After calculating the percentage of members who scored a given statement, the consensus was categorized as strong, moderate, or weak depending on whether it was ≥80%, 50-79%, or ≤49%, respectively.

Results: Of 10 statements, strong consensus was reached for seven statements. NAC is unquestionably the antidote for paracetamol poisoning. As an adjunctive therapy, it is recommended for early-stage idiopathic pulmonary fibrosis, cystic fibrosis, and pneumonia

management. For procedural and critical care, strong consensus recommended NAC for treating refractory mucus plugs causing atelectasis, facilitating tracheostomy care, and prophylaxis of contrast-induced nephropathy in high-risk, underhydrated patients. Indications with moderate consensus include regular use of NAC during diagnostic bronchoscopy and to decrease risk of exacerbation in COPD patients not on inhaled corticosteroids. A moderate consensus also recommended its potential role as an adjunct in cardiovascular disease, including heart failure and myocardial infarction.

Conclusion: These evidence-based consensus statements are a guide for rational and effective use of NAC across pulmonary, toxicological, and metabolic indications.

Biography

Dr. Davinder Kundra is a Consultant Pulmonologist at Manipal Hospitals, Dwarka, New Delhi, with qualifications including MBBS (UCMS & GTBH), DNB in Respiratory Medicine, and DTCD. Dr. Kundra expertise covers COPD, asthma, allergies, interstitial lung diseases, tuberculosis, pneumonia, sleep medicine, and interventional pulmonology procedures such as bronchoscopy, EBUS-guided FNAC, lung biopsy, and medical thoracoscopy. Dr. Kundra leads a technologically advanced pulmonology team. Dr. Kundra is a life member of the Indian Chest Society and the European Respiratory Society, and a member of the American College of Chest Physicians (ACCP). Dr. Kundra regularly contributes to academic publications and scientific forums.

Emma Borrelli

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Redox homeostasis as a therapeutic target in Chronic Obstructive Pulmonary Disease (COPD): Emerging strategies and preliminary clinical evidence

Chronic diseases characterized by persistent oxidative stress—such as cardiovascular disorders, type 2 diabetes, neurodegenerative diseases, and Chronic Obstructive Pulmonary Disease (COPD)—share common pathogenic pathways, including sustained inflammation and redox imbalance. However, current pharmacological approaches only partially address these mechanisms, highlighting the need for innovative therapeutic strategies. As far as COPD, recent studies reported the importance of restoration of redox homeostasis as key factor in clinical treatment. On this basis, modulation of oxidative stress through integrative approaches, including physical activity, caloric restriction, and bioactive dietary compounds, has been proposed to enhance endogenous antioxidant defenses in COPD patients. Unfortunately, these interventions are often limited by poor adherence, variability in bioavailability, and inconsistent clinical outcomes. Increasing evidence suggests that the regulation of the Nrf2/ARE pathway plays a central role in redox homeostasis and protection of lung cells and the inhibition of this pathway may contribute to the COPD progression, underscoring the importance of a well calibrate redox modulation. Among emerging strategies, controlled oxidative stimuli—such as the use of ozone in medicine—have been proposed as indirect activators of endogenous antioxidant systems. In fact, ozone, when administered appropriately, may induce a transient and controlled oxidative stress in cells capable of stimulating cytoprotective pathways, including Nrf2 activation.

To investigate this approach, a case-control clinical study was conducted on 50 patients with moderate to severe COPD. All participants were ex-smokers in a stable phase of the disease and receiving standard pharmacological therapy (inhaled antinflammatory and/or bronchodilators). Patients were randomized into two groups: One group received standard

therapy plus medical ozone therapy (major autohemotherapy protocol), while the control group received standard therapy alone.

Clinical outcomes were assessed before and after the intervention through pulmonary function tests, arterial blood gas analysis, Six-Minute Walking Test (6MWT), Borg dyspnea scale, and St. George's Respiratory Questionnaire (SGRQ). Patients treated with ozone therapy showed a significant improvement in functional capacity, with an increase in walking distance exceeding the minimal clinically important difference (>25m). Additionally, a reduction in perceived dyspnea and a significant improvement in quality of life scores were observed. No comparable changes were detected in the control group.

Further evaluation of oxidative stress markers demonstrated a significant reduction in plasma Reactive Oxygen Metabolites (dROMs) following ozone therapy, whereas no changes were observed in controls. These findings support the hypothesis that ozone therapy may contribute to restoring redox balance in COPD patients.

Importantly, the treatment was well tolerated, with no reported adverse effects during long-term follow-up. Patients also reported subjective improvements in well-being.

In conclusion, modulation of redox homeostasis through controlled activation of endogenous antioxidant pathways represents a promising adjunctive strategy in COPD management. Although a larger randomized controlled trials are required to confirm these preliminary findings, ozone therapy, acting as a molecular redox signal, may offer clinical benefits by improving functional capacity, reducing oxidative stress, and enhancing quality of life in patients affected by chronic pulmonary diseases.

Biography

Emma Borrelli MD, PhD, is Adjunct Professor and Scientific Director of the Postgraduate Courses on Ozone Therapy at the University Medical Hospital Le Scotte in Siena, Italy. Borrelli earned her MD, specialized in Pulmonary Diseases, and obtained a PhD in Cardiopulmonary Pathophysiology. Borrelli has been a close collaborator of Prof. V. Bocci in advancing the medical application of ozone therapy. Dr. Borrelli is author and co-author of numerous chapters and articles in national and international books and peer-reviewed journals. Borrelli research focuses on the experimental and clinical application of ozone and other redox modulators in the treatment of chronic diseases.

Hu Qi

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Multidisciplinary treatment of severe pediatric lung abscess with empyema presenting as abdominal pain: A case report

Background: Pulmonary abscess is a rare but severe suppurative lung infection in the pediatric population. Typical clinical manifestations include fever, cough, productive sputum, and chest pain. The condition is often associated with a prolonged course and high morbidity, and management becomes particularly challenging when complicated by empyema. We report a unique case of pediatric lung abscess presenting with abdominal pain as the initial symptom. The patient exhibited an insidious onset and was successfully treated through a comprehensive strategy involving early thoracoscopic drainage, targeted antibiotic therapy, mechanical ventilation, nutritional support, and pulmonary rehabilitation. No significant sequelae were observed during follow-up. This case highlights the atypical presentation of lung abscess in children and supports the role of multidisciplinary minimally invasive management in complex cases.

Case Report: A 2-year-9-month-old male child presented with abdominal pain as the initial symptom. An abdominal CT scan revealed a large pleural effusion, and the diagnosis was subsequently confirmed by chest CT and pleural fluid analysis. Routine examination of the pleural fluid and Metagenomic Next- Generation Sequencing (mNGS) identified the causative pathogen. The patient was diagnosed with sepsis, lung abscess, empyema, and severe pneumonia, indicating a critical condition. A comprehensive, multidisciplinary treatment strategy was implemented:

1. **Antimicrobial Therapy:** Initial intravenous administration of vancomycin and meropenem;
2. **Surgical Intervention:** Early thoracoscopic drainage, decortication, and closed thoracic drainage;

3. **Life Support:** Mechanical ventilation and nutritional support;
4. **Follow-Up Care:** Transition to oral linezolid for sequential therapy, combined with systematic pulmonary rehabilitation. The patient responded favorably to the treatment, achieving a satisfactory outcome with a good prognosis.

Conclusion: Pediatric lung abscess, empyema, and sepsis represent critical illnesses characterized by significant clinical heterogeneity. While prolonged antibiotic therapy remains the cornerstone of treatment for both primary and secondary lung abscesses, this case suggests that early invasive intervention (e.g., thoracoscopic surgery) in selected patients can achieve superior drainage outcomes, reduce the duration of antibiotic therapy and hospitalization, and improve prognosis. Furthermore, a multidisciplinary team approach is of significant value in the management of high-risk pediatric infections.

Keywords: Pediatric, Lung Abscess, Empyema, Metagenomic Next-Generation Sequencing, Thoracoscopy, Multidisciplinary Treatment.

Biography

Dr. Hu Qi Associate Chief Physician (Senior Attending Physician) with a Master's degree, practices in the Department of Pediatrics at Chongqing Health Center for Women and Children (Women and Children's Hospital of Chongqing Medical University). With over 20 years of clinical experience, she specializes in respiratory diseases, chronic cough, asthma, allergic disorders, neonatal critical care. Dr. Hu serves on several academic committees and has published over 10 core Chinese journal articles, 4 SCI papers, and 4 education papers. Dr. Hu has participated in National Natural Science Foundation projects and municipal research, holds 9 patents, and is an editor/co-author of two monographs.

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Knowledge, Attitude, and Practices (KAP) pertaining to Latent Tuberculosis (LTBI) among household contacts of patients diagnosed with bacteriologically-confirmed pulmonary tuberculosis in the seven districts of Iloilo City, Philippines

Background: Latent Tuberculosis Infection (LTBI) is a silent immune response to *Mycobacterium tuberculosis* without clinical symptoms but with potential for reactivation. Despite progress toward the WHO "End TB Strategy," household contacts of Tuberculosis (TB) patients remain highly susceptible. In Iloilo City, persistent gaps in knowledge and preventive practices continue to hinder effective LTBI control and early intervention.

Objective: To assess the Knowledge, Attitudes, and Practices (KAP) on LTBI among household contacts of bacteriologically confirmed pulmonary TB patients across the seven districts of Iloilo City.

Methodology: This descriptive cross-sectional analytical study included 278 randomly selected household contacts. Data were collected through structured self-administered questionnaires and analyzed using the Kruskal–Wallis test, Spearman's rank correlation, and logistic regression at a 0.05 significance level.

Results: Respondents had low knowledge (mean=3.6/10), fair attitudes (32.7/50), and fair practices (35.4/50). Education, district of residence, and access to health facilities significantly affected KAP levels. Moderate positive correlations were found between knowledge–practice (r=0.30) and attitude–practice (r=0.36), while knowledge–attitude showed a weak association (r=0.27).

Conclusion: Household contacts displayed willingness but limited understanding of LTBI. Improving education, communication, and healthcare accessibility is essential to strengthen LTBI prevention and advance the WHO's End TB goals.

Keywords: Latent Tuberculosis Infection, Knowledge, Attitude, Practices, Household Contacts.

Biography

Dr. Matthew studied Medical Laboratory Science at the University of San Agustin, Iloilo City, Philippines and is a registered Medical Technologists. Matthew pursued his medical degree at the West Visayas State University College of Medicine, Iloilo City, Philippines and finished his Internal Medical Residency Training at the West Visayas State University Medical Center. Matthew's research "Knowledge, Attitude, and Practices Pertaining to Latent Tuberculosis among Household Contacts of Patients Diagnosed with Bacteriologically-Confirmed Pulmonary Tuberculosis in the Seven Districts of Iloilo City" has been awarded 2nd place in the Philippine College of Physicians Western Visayas Chapter Descriptive Category.

Karamoko Mamadou*, J.D. Gueu, K. Sékou, P. Wilnique, Z.B.Y. Guillaume, S. Moussa, K. Félix, I. Tiembré

Ministry of Health/FETP Cote d'Ivoire, Cote d'Ivoire

Epidemiological profile of pulmonary tuberculosis in Kouto, Côte d'Ivoire, 2015–2024

Introduction: Côte d'Ivoire, like most sub-Saharan African countries, has a high incidence of tuberculosis. In 2023, it reported 21,458 cases with 1,717 deaths. The Kouto health district, in the Bagoué region, is no exception. However, tuberculosis data from the district have never been thoroughly analyzed. This study was conducted to verify the quality of the data and describe the tuberculosis cases.

Methods: A descriptive cross-sectional study was conducted from February to March 2025. It included tuberculosis patients registered in the case reporting records of Kouto General Hospital (2015-2024). The variables studied were: Age, sex, municipality, form of tuberculosis, patient type, patient outcome, follow-up examinations, and HIV test. The collected data were analyzed using Excel 2016 and Epi Info 7. The statistical measures calculated were mean, frequency, proportion, and rate. The results were presented in text, tables, graphs, and maps.

Results: A total of 166 tuberculosis patients were included, 10% of whom were HIV-positive, with a case fatality rate of 9%. The mean age was 38 years with a standard deviation of 16.57 years, and the male-to-female ratio was 1.7. They were 106 males (64%) and 60 females (36%). Pulmonary tuberculosis accounted for 145 cases (87%), and extrapulmonary tuberculosis for 21 (13%). Cases appeared throughout the year, with a minimum in 2015 (11 cases) and a maximum in 2017 and 2023 (23 cases). They were distributed across all municipalities of Kouto, with the majority (65 cases, 39%) in Kouto itself. The quality of all the data was assessed as good at 92.82%.

Conclusion: Tuberculosis primarily affects young men. It occurs throughout the year and in all localities of Kouto, with a high incidence in Kouto and Gbon, and in 2017 and 2023. Hence the importance of strengthening surveillance by producing quality data for decision making.

Keywords: Analysis, Surveillance, Tuberculosis, Kouto, Côte d'Ivoire.

Biography

Karamoko Mamadou, after completing his Baccalaureate (Series D), Mamadou studied nursing and midwifery at the National Institute for Health Worker Training in Côte d'Ivoire, where Mamadou earned his State Diploma in Nursing (2003). Mamadou joined the Ministry of Health and Hygiene (2004). Then, Mamadou obtained a Master's degree in Community Health Research from Alassane Ouattara University in Bouaké (Ivory Coast) in 2018. Mamadou graduate of the Field Epidemiology Training Program (Frontline in 2020 and Intermediate in 2025). Mamadou has published a book and an article. Mamadou was named Best Health Worker for Tuberculosis Management in Poro-Tchologo-Bagoué (Ivory Coast) in 2018.

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Untargeted metabolomics of plasma and saliva: Insights into smoking-associated Chronic Obstructive Pulmonary Disease (COPD) pathophysiology

Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disorder characterized by airflow limitation, chronic inflammation, and loss of elastic recoil, leading to reduced Forced Expiratory Volume (FEV) and impaired lung emptying during expiration. It is the third leading cause of mortality worldwide, accounting for approximately 3.7 million deaths annually. India bears highest burden, contributing ~15% of global COPD cases and ~30% of COPD-related deaths. COPD is influenced by multiple risk factors, including cigarette smoking, air pollution, biomass burning, fossil fuel exposure, and genetic predispositions such as α-antitrypsin deficiency. Among these, cigarette smoking accounts for nearly 90% of COPD cases. Despite the metabolic complexity of COPD, the metabolite profiles across COPD subgroups, such as smokers, ex-smokers, and non-smokers remain unexplored in blood plasma. In addition to this, non-invasive and less complex bio fluids serve as effective matrix to investigate the metabolic profile. Saliva is a promising, non-invasive bio-fluid that reflects systemic metabolic changes, yet its potential in COPD is largely underexplored. In this study, we performed untargeted GC-MS based metabolomics of plasma and saliva in COPD patients (smokers, ex-smokers, and non-smokers) to identify distinct metabolic signatures and associated pathways that differentiate COPD subgroups at the molecular level. We observed elevated oxidative stress level in COPD subgroups, by measuring GSH/GSSG ratio, and plasma lipid peroxidation. RBC membrane fluidity was observed to be reduced which further indicates perturbation in membrane lipids. The multivariate PCA and PLS-DA analysis of plasma and saliva metabolites showed the clear distinction between the patient subgroups. We observed significant alteration in metabolites in plasma and saliva sample of COPD patients compared to the healthy individuals. Pathway analysis indicated significant perturbations in key metabolic pathways, including biosynthesis of fatty acids, Glycosylphosphatidylinositol (GPI) anchor,

arginine, and TCA. Biomarker analysis revealed significant metabolites and lipids with AUC >0.8 such as Fumaric acid, scylloinositol, Palmitic acid, methyl stearate, Arachidic acids etc. Additionally, correlation analysis of spirometer data shows positive and negative correlation with altered metabolites. Overall, we observed the effect of smoking on COPD progression and staging in terms of differential expression of their metabolites. Our study reveals that smoker and ex-smoker with COPD has severely altered metabolome profile than non-smoker with COPD suggesting that cigarette smoke plays crucial role in severity of disease.

Biography

Rishita singh is a PhD candidate in the Department of Biological Sciences at the Indian Institute of Science Education and Research (IISER), Kolkata, India. Rishita's research focuses on Chronic Obstructive Pulmonary Disease (COPD), utilizing various mass spectrometry platforms for molecular profiling to identify reliable biomarkers. Rishita's PhD is supported by a fellowship from the Council of Scientific and Industrial Research (CSIR), Government of India, and holds BSc and MSc degrees in Botany from the Department of Botany, Banaras Hindu University (BHU), India.

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Chemical pleurodesis with povidone iodine in pneumothorax and metastatic pleural effusions

Introduction: Chronic or recurrent pneumothorax and metastatic pleurisy are serious problems. The need to find a less invasive and inexpensive therapeutic means to create a symphysis. We report our experience in chemical pleurodesis with povidone iodine at 10% (betadine) during 5 years.

Materials and Method: Prospective descriptive study between 2019-2025. This chemical pleurodesis with betadine was indicated in cases of chronic pneumothorax lasting more than 10 days or after 2 recurrences in 27 cases and in 30 cases of recurrent metastatic pleurisy. We excluded dysthyroidis and Iodine povidone allergy. Chemical pleurodesis technique with 10% of betadine: Instillation is done in the supine position through chest tube. In case of metastases pleurisy: After ultrasound detection and pleural drainage of fluid, betadine is instilled through the drain. This solution contains 20 ml of 10% Betadine, 80 ml of 9% isotonic saline serum and 5 ml of 2% xylocaine. It maintained for 2 hours. Then trans- mural aspiration. Removal of the drain after aspiration for metastases pleurisy and after disappearance the pneumothorax.

Results: This technique was a success with an effectiveness of around 90% in cases of pneumothorax. 70.37% benefited from a single instillation and 29.62% after 2 instillations. Lung expansion noted between the 2nd and 5th day. No recurrence of pneumothorax in 88.46% after pleurodesis with a follow-up of 3 years in 91.30% cases. Concerning metastatic pleurisy, drying of the fluid after a single instillation was noted in 90%. Local infectious complications were noted in 6 cases. Good tolerance apart from local pain of variable intensity in all pneumothoraxes while it is absent in cases of metastatic pleurisy.

Conclusion: The chemical pleurodesis with bétadine has effectiveness, safety and good tolerance. It is an interesting alternative with a lower cost compared to other sclerogen.

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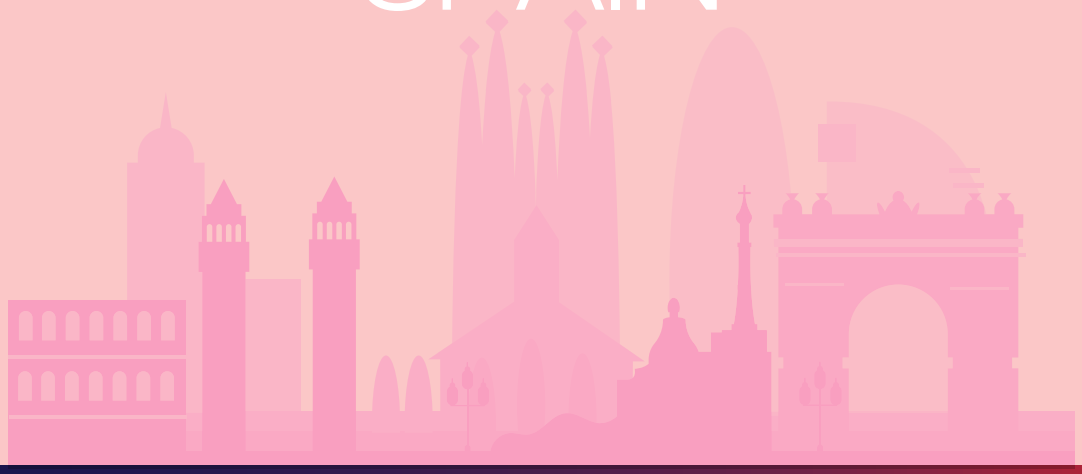

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