SCHOLARS CONFERENCES

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024

Village Hotel Changi, Singapore

Exhibitor

LAMBDA BIOLOGICS

Contact Us

Victor Oliver

Program Manager | Pharmaceutics 2024

victor.oliver@scholarsconferences.com

+447426060443

21 Clifton Road, Newcastle Upon Tyne, England | United Kingdom, NE4 6XH

SCIENTIFIC PROGRAM

DAY 01 - September 23, 2024
Sphere 1, Village Hotel Changi,
Singapore

08:30-09:30 Registrations

09:30-09:45 Opening Ceremony

Keynote Forum

09:30-10:10 **Title: Causal relationship between immune cells and gastroduodenal ulcer: A Mendelian randomization analysis**
Hui Tang, *The First People's Hospital of Yunnan Province, China*

10:10-10:50 **Title: Leveraging machine learning and vibrational spectroscopy for enhanced cancer diagnostics**
Parmita Mishra, *Precigenetics, United States*

Group Photo

Refreshments Break @ 10:45-11:05 @ Sphere Foyer

11:10-11:50 **Title: The role of histone mutations in human disease**
Kui Ming Chan, *City University of Hong Kong, Hong Kong*

11:50-12:30 **Title: From retinoids to DNA polymerase inhibition in cancer therapeutics**
Nadine Darwiche, *American University of Beirut, Lebanon*

12:30-13:10 **Title: Influence of remnant lipoprotein article cholesterol on non-target lesions progression in patients undergoing percutaneous coronary intervention**
Li Liang, *Xuzhou Medical University, China*

Networking Lunch Break @ 13:10-14:00 @ The Blue Tiffin

14:00-14:40 **Title: China's regimen of fulminant myocarditis**
Dao Wen Wang, *Tongji Hospital, China*

14:40-15:20 **Title: Warfarin resistance or coagulopathy and fight against reoperation from mechanical to bioprosthetic valves: A case report**
Souna Boyadjian, *Nork Marash Medical Center, Armenia*

Speaker Session:

Session Chair: Dao Wen Wang, Tongji Hospital, China

15:20-15:45 **Title: Self-recruited neutrophils trigger over activation of innate immune response and phenotypic change of cardiomyocytes in fulminant viral myocarditis**
Huihui Li, *Tongji Hospital, China*

15:45-16:10 **Title: Frequency of high degree atrioventricular block in patients with acute anterior wall myocardial infarction**
Waqas Dar, *Rehmatul lil Alameen Institute of Cardiology, Pakistan*

Refreshments and Networking Break @ 16:10-16:30 @ Sphere Foyer

16:30-16:55 **Title: Factors affecting door to balloon time for patients presenting with ST segment elevation myocardial infarction for primary angioplasty in a tertiary care centre in western India**
Anand Ahuja, *Rhythm Heart Institute, India*

16:55-17:20 **Title: Impact of intra-aortic balloon pump support on early outcomes in coronary artery bypass grafting for patients with reduced left ventricular ejection fraction: A single-center study**
Abir Tazim Chowdhury, *Evercare Hospital Dhaka, Bangladesh*

17:20-17:45 **Title: Percutaneous device closure of sub aortic and doubly committed Ventricular Septal Defect (VSD) case series from Bangladesh**
Nurun Nahar Fatema, *LabAid Cardiac Hospital, Bangladesh*

17:45-18:10 **Title: The treatment effects of Immunoglobulin on Fulminant Myocarditis (FM) was controversial**
Chen Chen, *Tongji Hospital, China*

Panel Discussions & B2B Meetings

Day 01 End | Closing Ceremony

SCIENTIFIC PROGRAM

DAY 02 - September 24, 2024
Sphere 1, Village Hotel Changi,
Singapore

08:50-09:00 Opening Ceremony

Keynote Forum

09:30-10:00 **Title: The stability and delivery challenges of commercial nucleic acid therapeutics**
Rahul G Ingle, *Datta Meghe College of Pharmacy, DMIHER, India*

Speaker Session:

Session Chair: Nadine Darwiche, American University of Beirut, Lebanon

10:00-10:25 **Title: Icariside II induced ferroptosis to suppress the progression of NSCLC through activation of the mitochondrial dysfunction**
Fei Xu, *Affiliated Hospital of Shandong University of Traditional Chinese Medicine, China*

10:25-10:50 **Title: The Five Reasons Biotech Companies Fail to Raise Capital and How to Fix Them**
David Dobkin, *LifeSci Capital LLC, USA*

Refreshments and Networking Break @ 10:50-11:10

11:10-11:35 **Title: The Synthesis of 2-amino-3- benzylindolizines with using the mixture of halides n-benzyl-2-halogenpyridines and CH-acids – derivatives acetonitrile**
Kyryl Bocharov, *Luhansk Taras Shevchenko National University, Austria*

11:35-12:00 **Title: Obtaining new recombinant cysteine synthase A from Limosilactobacillus reuteri LR1 and studying its properties**
Natalia Chikurova, *The Federal Research Centre of the Russian Academy of Sciences, Russia*

12:00-12:25 **Title: Expression optimization of the recombinant peptidase M23 from Limosilactobacillus reuteri LR1**
Leonid Shaposhnikov, *The Federal Research Centre of the Russian Academy of Sciences, Russia*

12:25-12:50 **Title: Armadillidium vulgare miR-2863 Inhibits Liver Cancer Cell Proliferation, Migration, and Invasion via the Bcl-2/Bax/Caspase-3 Signaling Pathway**
Chun Yi, *Hunan University of Chinese Medicine, China*

Networking Lunch Break @ 12:50-13:40

13:40-14:05 **Title: An increase in the cardiac consultation of suspected cardiac involvement symptoms with unaltered etiology during the post-COVID-19 period**
Yaqi Tang, *Qingdao Women and Children's Hospital, Qingdao University, China*

14:05-14:30 **Title: Minimally invasive cardiac surgery in pediatrics patients**
Mujeeb Ur Rehman, *Peshawar Institute of Cardiology, Pakistan*

14:30-14:55 **Title: Determination of bioactive compounds in selected medicinal plants and their activity evaluation**
Binita Pokhrel, *Purejoy Private Limited, Nepal*

Poster Session @ 14:55-15:40

SP0101 **Title: Innovative 2D nanoplatforms for advanced multi-drug delivery in future cancer treatments**
Zarska Ludmila, *Palacky University Olomouc, Czech Republic*

SP0102 **Title: Graphene derivatives as a way to understand cancer cell processes for potential targeted therapies**
Chaloupkova Zuzana, *Palacky University Olomouc, Czech Republic*

SP0103 **Title: Plasma small RNAs as predictive and monitoring biomarkers for immunotherapy response in advanced gastric cancer**
Fang Jingshuai, *Southeast University, China*

SP0104 **Title: A Novel Automated Microfluidic Cartridge-Based Platform for Nucleic Acid Extraction**
Elian Rakhmanaliev, *One BioMed, Singapore*

Refreshments and Networking Break @ 15:40-16:00

Panel Discussions & B2B Meetings

Day 02 End | Closing Ceremony

SCIENTIFIC PROGRAM

DAY 03 - September 25, 2024
GMT +2 | VIRTUAL | ZOOM

09:00-09:10 Opening Ceremony

Keynote Forum

09:10-09:40
Title: A Novel Green Chemistry Approach for Silver Nanoparticles Production for Intended Pharmaceutical Applications
Abhishek Gupta, *University of Wolverhampton, United Kingdom*

09:40-10:10
Title: Impact of PBPK and PBBM in Generic Drug Product Development
Sivacharan Kollipara, *Dr. Reddy's Laboratories Ltd., India*

10:10-10:40
Title: Hot Melt Extrusion an Emerging Drug Delivery Technology
Rashid Mahmood, *Surge Laboratories Private Limited, Pakistan*

10:40-11:10
Title: Lactococcus Lactis as a Promising Factory to Express & Characterize Membrane Proteins
Annie Frelet-Barrand, *FEMTO-ST Institute, France*

Refreshments Break @ 11:10-11:20

Speaker Session

11:20-11:40
Title: Quality Risk Management System in Pharmaceuticals
Syed Asif Shah, *Nabiqasim Group of Industries, Pakistan*

11:40-12:00
Title: Unlocking the Potential of Agro-Biotechnology for Sustainable Natural Product Development
Zubair Ameen, *Khwaja Fareed University of Engineering and Information Technology, Pakistan*

12:00-12:20
Title: 123VCF: An Intuitive and Efficient Tool for Filtering VCF Files
Milad Eidi, *Tarbiat Modares University, Iran*

12:20-12:40
Title: Revolutionizing Healthcare: 3D Bioprinting Protocols for Innovative Medicine
Suchita Waghmare, *Rashtrasant Tukadoji Maharaj Nagpur University, Iran*

Keynote Forum

12:40-13:10
Title: Generics Product Development & its Introduction for the US Market Solid Dosage (Tablet & Capsules)
Masihuddin Jaigirdar, *Mj Pharmconsult, USA*

Refreshments Break @ 13:10-13:20

Speaker Session

13:20-13:40
Title: Complexities and Potential of Multimodel Resins to Overcome protein Purification Challenges
Maryam Moazami, *Pasteur Institute, Iran*

13:40-14:00
Title: SOD1 is a Druggable Target in Platinum-Resistant Ovarian Cancer
Attila Szenasi, *University of North Carolina at Chapel Hill, United States*

14:00-14:20
Title: Characterization, Antibacterial, and Cytotoxic Activities of Silver Nanoparticles Using the Whole Biofilm Layer as a Macromolecule in Biosynthesis
Aghapy Yermans Yakoup, *Zewail City for Science and Technology, Egypt*

14:20-14:40
Title: Paracetamol is the most unscientific and dangerous drug for fever. Anyone can create a fever within hours using antipyretic objects
Yacob Mathai, *Marma Health Centre, India*

14:40-15:00
Title: Priming with Plant Extracts induces defense in host plant against pathogen
Anirudh Kumar, *Central Tribal University of AP (CTUAP), India*

15:00-15:20
Title: Targeting MMPs to overcome Cisplatin chemoresistance in ovarian cancer: Insights from RNA-Seq analysis and 3D structural alignment
Hadi Alizadeh, *Tarbiat Modares U niversity, Iran*

15:20-15:40
Title: Design and synthesis of oncolytic adenovirus encoding Hsp70 adjuvant fused to E6 and E7 antigenic sequences of Human Papillomavirus Types 16 and 18, and investigation of its therapeutic effects in a cervical cancer mouse model
Maryam Fazeli, *Motamed Cancer Institute, ACECR, Iran*

SCIENTIFIC PROGRAM

15:40-16:00	**Title: Towards a Sustainable Biomolecule Delivery Platform Employing Carbon Nanotubes-Fortified Bacterial cellulose/Gelatin Nanocomposites** **Bahareh Behrouznejad,** *Royan Institute for Biotechnology, Iran*
E-Poster	
EP0101: 16:00-16:15	**Title: Investigation of the Tribological Properties of Cartilage-on-Cartilage and Cartilage-on-Glass Under Different Liquid Lubricants** **Haytam Kasem,** *Azrieli College of Engineering Jerusalem, Israel*
Day 03 End | Awards and Closing Ceremony	

Exhibitor

LAMBDA BIOLOGICS

Lambda Biologics is a cutting-edge biotechnology company specializing in animal-free solutions, particularly organoid technology. Our platform is versatile and can be applied to drug screening and toxicity testing, not only for pharmaceutical drugs but also for cosmetics and health functional foods.

Lambda Biologics GmbH
Mobile: 010-7121-6293
info@lambdabiologics.com
https://lambdabiologics.com/ or https://afs.lambda-bio.com/
Deutscher Pl. 5c, 04103 Leipzig, Germany

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

KEYNOTE SPEAKERS Day 1

Hui Tang
The First People'S Hospital of Yunnan Province, China

Biography

Hui Tang received her PhD in Environmental Medica V Engineering from Kunming University of Science and Technology, China. Tang's major interests are molecular mechanisms of gastrointestinal tumors and development of anti-tumor oncolytic vaccine. Her group is currently work on the mechanisms beyond the synergistic effect of rVV-CCL5 on PD-L1/TDO2 inhibitors treatment of microsatellite-stable colorectal cancer (MSS-CRC).

Causal relationship between immune cells and gastroduodenal ulcer: A Mendelian randomization analysis

BACKGROUND: Gastroduodenal ulcers are a common gastrointestinal disease encompassing both gastric ulcers and duodenal ulcers. Patients not only face the challenges posed by the disease itself but also frequently suffer from associated complications, posing significant threats to human health. Antibiotic resistance in treating gastroduodenal ulcers highlights the pressing demand for new therapeutic strategies. The immune system is pivotal in the development and healing of peptic ulcers, yet the immunological mechanisms specific to gastroduodenal ulcers are intricate and varied. Applying Mendelian randomization analysis to investigate the causal relationship between immune cells and gastroduodenal ulcers not only aids in a deeper understanding of their pathophysiological mechanisms but also facilitates the development of new therapeutic methods and intervention strategies.

PURPOSE: The aim of this study is to apply Mendelian randomization analysis to investigate the causal relationship between immune cells and gastroduodenal ulcers.

MATERIAL & METHODS: Using immune cell phenotypes as exposures and gastroduodenal ulcers as outcomes, a two-sample Mendelian randomization (MR) analysis method was conducted to investigate the causal relationship between immune cell phenotypes and gastroduodenal ulcers. Data were sourced from publicly available GWAS databases, with the Inverse Variance Weighted (IVW) method employed as the primary statistical testing approach ($P<0.05$). Sensitivity analysis, heterogeneity testing, and assessment of horizontal pleiotropy were conducted to ensure the reliability of the data.

RESULTS: Among 731 immune cell phenotypes, 27 were found to have a causal relationship with gastroduodenal ulcers. Specifically, 15 immune cell phenotypes exhibited a negative correlation with increased risk of gastroduodenal ulcers, while 12 were positively correlated with increased risk.

CONCLUSION: This study elucidates the causal relationship between 27 immune cells phenotypes and gastric duodenal ulcers. It contributes to understanding the pathogenesis and progression of gastroduodenal ulcers and promotes the development of novel therapeutic approaches.

Parmita Mishra
Precigenetics, United States

Biography

Parmita Mishra is the founder and CEO of Precigenetics, leading the development of advanced non-invasive diagnostic tools that integrate biophotonics with machine learning. Whilst completing studies at the University of Pennsylvania in computational biology and bioinformatics, Parmita is dedicated to pushing the boundaries of healthcare technology, with a particular focus on non-invasive diagnostics.

Leveraging Machine Learning and Vibrational Spectroscopy for Enhanced Cancer Diagnostics

The integration of machine learning (ML) with vibrational spectroscopy, including Raman and infrared spectroscopy, offers a transformative approach to non-invasive cancer diagnostics by enhancing the identification of molecular signatures unique to cancerous cells. This study applies advanced ML algorithms to open-source cancer datasets, refining the detection and classification of cancer cells through their spectral data. We evaluate the efficacy of both supervised and unsupervised learning models in processing vibrational spectra, focusing on feature extraction, noise reduction, and pattern recognition. These techniques are applied to open-source data, enabling the identification of biomarkers associated with various cancer types. Our results demonstrate the precision and potential of ML-enhanced vibrational spectroscopy in distinguishing between malignant and benign cells. Our research underscores the potential of ML-driven vibrational spectroscopy to create cost-effective, real-time diagnostic tools suitable for clinical deployment. By leveraging open-source cancer data, this study not only validates the robustness of our approach but also contributes valuable insights to the broader cancer research community. These findings pave the way for future innovations in early detection and personalized treatment strategies.

Kui Ming Chan
City University of Hong Kong, Hong Kong

Biography

K. M. CHAN graduated with BSc and received his PhD at the department of Biochemistry, the University of Hong Kong (HKU). He then moved to Mayo Clinic (Rochester MN, USA) for postdoctoral training and obtained the Edward C. Kendall Research Fellowship in Biochemistry. In February 2015 he joined the Department of Biomedical Sciences (BMS), City University of Hong Kong as a tenure-track Assistant Professor and was promoted to Associate Professor in 2021. Dr Chan is interested in understanding the role of epigenetics in regulating gene expression under physiological and pathological conditions. His group is currently focusing on

1. Identifying new cancer driving histone mutations and developing therapeutics for these diseases using different animal models and

2. The role of novel protein factors and RNA binding proteins in X Chromosome inactivation.

The Role of Histone Mutations in Human Disease

Histones are small nuclear proteins essential for DNA packaging and epigenetic gene regulation. Recent studies on the various cancer associated-histone mutations have revealed the significance of oncohistones in driving different types of cancers. Others and work done by us have previously revealed the identification and characterization of the first oncogenic mutation in genes encode histone H3 (H3K27-to-M in diffuse intrinsic pontine gliomas "DIPG"). The H3K27M mutation occurs in the N-terminal tail domain and affects gene expression via inhibiting PRC2/EZH2 activity and modulating histone post-translational modifications. In addition to the onco-mutations found in histone H3, we have recently identified three oncogenic mutations in genes encode histone H2B in pancreatic ductal adenocarcinoma "PDAC" and breast cancer. The H2B-G53D mutation weakens the interaction between the histone octamer and the nucleosomal DNA. Through analyzing the ATAC-seq, PRO-seq, CUT&RUN and RNA-seq on the CRISPR-Cas9 generated H2BG53D knockin PDAC cells, our data demonstrated that the G53D mutant H2B elevated the transcription of genes involved in cancer properties including cell migration and the PI3K-Akt signaling pathway. Depletion of one of the target genes ANXA3 reduced the oncogenic properties in H2BG53D mutant cells, revealing the significance of the H2BG53D mutation in PDAC development. The H2BE76K mutation alters the interaction between Histone H2B and H4, destabilizes the nucleosomes and affects the expression of genes in multiple cancer pathways. In this meeting, I will present our ongoing work of the role of the above two mutations in pancreatic and breast cancers.

Nadine Darwiche
American University of Beirut, Lebanon

Biography

Nadine Darwiche is a Professor in the Biochemistry and Molecular Genetics Department at the American University of Beirut. Her research focuses on cancer prevention and targeted cancer therapy using retinoids and on the characterization of inhibitors of DNA polymerases. She is also interested in drug development from medicinal plants and drug formulations using nanoparticles. She teaches biochemistry and cancer-related courses and advises graduate students focusing on cancer research. She is an active member of several cancer societies (AACR- EACR- Women in Cancer Research USA- American Society for Biochemistry and Molecular Biology- Lebanese Association for the Advancement of Science). She is an associate editor and reviewer of several cancer-related journals and grants.

From retinoids to DNA polymerase inhibition in cancer therapeutics

Retinoids are a group of vitamin A derivatives, that exhibit various biological activities, have been successful in the cancer clinic. Synthetic retinoids containing an adamantyl group (adamantly retinoids) have been reported to selectively interact with retinoic acid receptors (RAR). One such compound, CD437, exhibits broad apoptotic effects in various tumor cells, irrespective of RAR activation. Another adamantyl retinoid, ST1926, derived from CD437, displays enhanced antiproliferative and antiapoptotic properties along with improved pharmacological characteristics. ST1926 is orally bioavailable, well-tolerated, and exhibits potent antitumor effects that are independent of RAR and p53. ST1926 has demonstrated significant efficacy against solid tumors (such as ovarian, lung, prostate, breast, colorectal, teratocarcinoma, pancreatic, neuroblastoma, glioblastoma, mesothelioma, and rhabdomyosarcoma) and hematological malignancies (including acute myeloid leukemias, adult T cell leukemia/lymphoma, chronic myeloid leukemia, and primary effusion lymphoma). Studies indicate that ST1926 and CD437 inhibit DNA polymerase α (POLA1), causing substantial DNA damage. POLA1, which initiates DNA synthesis in mammalian cells, is often elevated in tumors compared to normal tissues. Although effective micromolar concentrations of ST1926 are quickly achieved in plasma after oral administration, rapid glucuronidation leads to a drop in plasma levels, which has halted its clinical development. Efforts to enhance ST1926's bioavailability include developing analogs with improved pharmacological properties, like MIR002 and GEM144, which target both POLA1 and histone deacetylase 11. MIR002 and GEM144 showed potent antitumor effects across various human cancer models. Additionally, nanoparticle formulations of ST1926 have been developed to improve stability and bioavailability, aiming to advance its clinical application.

Li Liang
Xuzhou Medical University, China

Biography

Li Liang is a Chief Physician and a Master's supervisor at Xuzhou Medical University. Liang currently serves as the Deputy Director of the Cardiology Department, the Director of the Coronary Care Unit (CCU), the Director of the Heart Failure Center, and the Director of the Cardiovascular Metabolism Center. He is an editorial board member of Frontiers in Cardiovascular Medicine and a reviewer for the European Heart Journal. Liang specializes in the interventional treatment of coronary artery disease, bedside and intracardiac ultrasound, and the diagnosis and treatment of heart failure and critical cardiac conditions. He has long been engaged in basic and clinical research on coronary artery function and microcirculation assessment and was the first in the world to propose the concept of using multiple quantitative indicators in MCE (Myocardial Contrast Echocardiography) for the combined evaluation of coronary blood flow.

Influence of Remnant Lipoprotein Particle Cholesterol on Non-Target Lesions Progression in Patients Undergoing Percutaneous Coronary Intervention

Background: The LDL-C is the primary lipid therapy target for coronary artery disease (CAD) after PCI. However, progression of coronary atherosclerosis occurs even LDL-C controlled well. This study aims to elucidate the relationship between RLP-C and the progression of non-target lesions (NTLs) in patients with well-controlled lipid levels after PCI, as well as to explore the clinical characteristics of patients with high RLP-C concentrations.

Methods: This retrospective study included 769 CAD patients who underwent percutaneous coronary intervention (PCI) between May 1,2016, and May 31,2019, and followed up coronary angiography (CAG) within 6 to 24 months thereafter. LDL-C levels were used to assess lipid control. Patients were categorized into progression and non-progression groups based on the assessment of NTLs progression via quantitative coronary angiography (QCA). Multivariate Cox regression analysis identified RLP-C as an independent risk factor for NTLs progression. Using the ROC curve, an optimal cutoff value for RLP-C was determined, and patients were stratified into two groups. Propensity score matching balanced confounding factors between groups, and Log-rank tests compared Kaplan–Meier curves for overall follow-up to assess NTLs progression.

Results: The control of LDL-C remains inadequate in CAD patients after PCI. Multivariate Cox analysis showed that RLP-C was an independent lipid risk factor for NTLs progression when LDL-C controlled well. The ROC curve for RLP-C demonstrated an AUC of 0.721 (SE 0.044, 95% CI=0.635–0.807, P<0.001), with an optimal cutoff of 0.555 mmol/L for predicting NTLs progression. Following propensity score matching, Kaplan–Meier curves illustrated a significantly higher cumulative rate of NTLs progression in patients with RLP-C levels ≥0.555 mmol/L (log-rank P<0.001; HR 4.175, 95% CI=3.045–5.723, P<0.001) compared to those with RLP-C levels <0.555 mmol/L. Elevated RLP-C levels were associated with high Triglyceride (TG) concentrations, diabetes mellitus (DM), and increased risk of revascularization.

Conclusion: The RLP-C could be a significant residual risk factor for cardiovascular disease progression after PCI. Lowering RLP-C below 0.555 mmol/L may assist in mitigating the progression of NTLs.

Dao Wen Wang
Tongji Hospital, Tongji Medical University, Huazhong University of Science and Technology, China

Biography

Dao Wen Wang, MD, PhD, is an academician of International Eurasian Academy of Sciences (IEAS), a Senior Specialist of Hubei Province. He is the Honorary Director of Department of Internal Medicine, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Director of Hubei Key Laboratory of Genetics and Molecular Mechanism of Cardiologic Disorders, and Director of Translational Medicine Center & Genetic Diagnosis Center. He is also Director of Hubei Provincial Quality Control Center of Fulminant Myocarditis, a Standing Committee member of Chinese College of Cardiovascular Physicians (CCCP), a committee member of Chinese Society of Internal Medicine, and chairman of Internal Medicine Section of Hubei Medical Association.

China's Regimen of Fulminant Myocarditis

Fuminant myocarditis is a class of severe inflammatory disease in the heart and is characterized with rapid onset and progressing, cardiogenic shock and extremely high mortality. We developed a novel treatment regimen, "Life Support Based Comprehensive Treatment Regimen", also known as "China's Regimen", which core contents include (1) Mechanical supports, especially mechanical circulatory support using IABP and plus ECMO if necessary to maintain basic circulation rather than vasoactive agents or cardiotenic drug; (2) applications of immunomodulatory therapy using sufficient doses of both glucocoticoid and immunoglubin rather than immunosuppresants and (3) applications of nueraminidase inhibitor as adjuvant. This treatment regimen effectively reduced in hospital mortality of fulminant myocarditis from higher than 50% to less than 3.8-7.5% with excellent long-term outcome (death: 1 of 66 patients in one year follow-up). Chinese Guidelines specially emphases "extremely early recognizing, extremely making diagnosis, extremely predicting and extremely treating patients with fulminant myocarditis".

Souna Boyadjian
Nork Marash Medical Center, Armenia

Biography

Souna has honed their expertise through years of hands-on experience. For the past five years, she has been an invaluable asset to Nork Marash Medical Center, Yerevan, Armenia, where she has made a significant impact on patient care and medical research. Souna is a proud member of several prestigious professional organizations, including the European Society of Cardiology (ESC), the European Association of Cardiovascular Imaging (EACVi), the American College of Cardiology (ACC), and the Armenian Cardiac Association (ACVC). Her commitment to advancing the field of cardiology is evident in their active participation in the NSTE-ACS registry of ESC, where she contributed valuable insights to the understanding and treatment of non-ST-elevation acute coronary syndromes, she was enrolled as a co-investigator in the study for evaluation of the TTR for INR control after mechanical valve prosthesis in Nork Marash Medical Center in the past year. Currently, Souna is involved in the STEMI registry of Armenia, aiming to improve the outcomes of patients with ST-elevation myocardial infarction through comprehensive data collection and analysis, and also involved in arrythmology fellowship program at Nork Marash Medical Center.

Warfarin Resistance or Coagulopathy and Fight Against Reoperation from Mechanical to Bioprosthetic Valves: A Case Report

Background: Resistance to high doses of different vitamin K antagonists is a very rare phenomenon, especially when the patient does not have the most common single nucleotide polymorphism mutations for warfarin resistance, which makes it challenging to reconsider the diagnosis of warfarin resistance or coagulopathy, and whether the patient will be thromboembolic episode-free after bioprosthesis replacement.

Case summary: A 42-year-old woman was diagnosed with severe mitral valve regurgitation, moderate aortic valve regurgitation, left ventricular global systolic dysfunction, no signs of pulmonary hypertension and dilated ascending aorta. She underwent mechanical mitral and aortic valve and ascending aorta prosthesisreplacement about one and a half years ago.

On PostOperative Day (POD) 3, warfarin (Coumadin®) 3 mg therapy was started with an International Normalized Ratio (INR) of 1.36 (therapeutic range, 2.00-3.00) and nadroparincalcium (Fraxiparine®) 0.6 mg once daily. She had a very long hospital stay for 79 days due to non-therapeutic INR readings. During her hospitalization, the warfarin dose was increased to 12 mg. However, the INR increased only until POD 11 with its subsequent decrease despite the high dose of warfarin.

An attempt to try several other anticoagulants (phenindione), (acenocumarol), with an increase in their doses aggressively, however, failed to correct the INR. Therefore, an switch back to warfarin was performed and the dose increased up to45 mg/day, during this time the INR was very labile with each increase and maintaining the new high dose of warfarin the INR decreased. Warfarin genetic tests were conducted, which did not detect any mutation for CYtochrome P450 enzymes (CYP2C9:430C>T; CYP2C9:A>C; CYP4F2:C>T) or Vitamin K epOxide ReductaseComplex (VKORC1:-1639 G>A) receptor, neither forcoagulation factor V nor factor II. It was decided to restart with a very low dose of warfarin 3 mg with the assumption that she might be inresponsive to high doses of warfarin and unfortunately had the same effect. Finally, the patient was switched back to warfarin starting with 30 mg/day and increased aggressively up to 72

mg until the INR became 2.74. On the same day, she was discharged with some advice to continue the intake of warfarin 75 mg/day.

Warfarin dose was further increased up to 85 mg/day post-discharge, but the INR stayed at non-therapeutic levels. Enoxaparin sodium 0.6 mg twice daily started to prevent mechanical valve thrombosis. After multiple consultations with cardiac surgical and hematology teams, it was decided to prescribe the oral anticoagulant phenprocoumon (Marcoumar®) and an anti-Xa and anti-IIa taking into consideration that both prosthetic valves were normallyfunctioning with enoxaparin.

Conclusion: Despite the satisfying idea of changing the mechanical to bioprosthetic valves in similar cases, it is reasonable to maximize the chance of preserving till today both normally functioning mechanical valves with different types of oral anticoagulants in order to postpone multiple future bioprosthesis replacements in such young patients.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

SPEAKERS Day 1

Huihui Li
Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, China

Biography

Li is a post-doc at the University of Huazhong University of Science and Technology, Wuhan, China. She worked as a visiting scholar at Chinese Academy of Medical Sciences and Peking Union Medical College in 2021 and received her Ph. D degree from Huazhong University of Science and Technology in 2024. Li's research focuses on fulminant myocarditis, elucidated the role of innate immune system in the development of fulminant myocarditis, identified several new diagnostic and therapeutic targets.

Self-Recruited Neutrophils Trigger Over Activation of Innate Immune Response and Phenotypic Change of Cardiomyocytes in Fulminant Viral Myocarditis

Fulminant myocarditis (FM) is a life-threatening, inflammatory disease. We explored the cellular dynamics and immunological networks during FM progression, the mechanisms underlying acute onset, and novel therapeutic targets. Four-to six-week-old male A/J mice were treated with coxsackievirus B3 (CVB3) to induce FM. During disease progression, dynamic changes in cardiac function, as measured by echocardiography, revealed a sudden decline in cardiac systolic function onday 4. Single-cell RNA sequencing was used to profile CD45+ cells and cardiomyocytes (CMs) extracted from mouse hearts on days 0, 4, and 7 post-infections. Transcriptomic signature revealed that healthy CMs differentiated into pro-angiogenic and pro-inflammatory CMs on day 4. Neutrophils, the most expanded immune cells on day 4, exhibited a developmental trajectory only after migrating to the heart. Neutrophils acquire higher pro-inflammatory, chemotactic, and cytokine-releasing abilities during the differentiation process. Well-developed neutrophils continuously attract peripheral neutrophils, resulting in the acute accumulation of neutrophils and subsequent monocytes in the heart. Moreover, cardiac-infiltrating neutrophils, but not viruses, induced phenotypic changes in CMs, which directly led to cardiac functional collapse. Blocking the self-recruiting loop of neutrophils by neutralising CXCR2 or CXCL2 and CXCL3 substantially reduced the mortality rate and prevented cardiac phenotypic changes and cytokine release in FM mice. This study provides a comprehensive single-cell atlas of immune cells and CMs in FM, and reveals that neutrophils exhibit a distinct developmental trajectory after infiltrating the heart. Well-developed cardiac neutrophils trigger the overactivation of the innate immune response and mediate phenotypic changes in FM. Our study suggests potential strategies for treating FM that target self-recruited neutrophils by blocking the CXCL2/CXCL3-CXCR2 axis.".

Waqas Dar
Rehmatul lil Alameen Institute of Cardiology, Pakistan

Biography

Waqas Dar is a consultant cardiologist at Rehmatul lil Alameen institute of Cardiology, Lahore, Pakistan and has 12 years of experience in field of cardiology. He was graduated from medical school in Pakistan in 2011. He has special interest in cardiac electrophysiology including invasive and non-invasive approaches. He has done a lot of research work which has been published in eminent journals. He has a positive attitude and uses tireless energy at his workplace to educate his colleagues and junior doctors.

Frequency of High Degree Atrioventricular Block in Patients with Acute Anterior Wall Myocardial Infarction

Atrioventricular (AV) block is an AV conduction disorder that can manifest in various settings, with varying symptomaticity and severity. Complications of acute ST-elevation myocardial infarction (STEMI) as AV blocks are often observed. The first degree of atrioventricular block is the most common and requires no treatment. The second-degree block is sub-classified in Mobitz type I and Mobitz type II. This study aimed to determine the frequency of high degree atrioventricular block in acute anterior wall myocardial infarction cases. The current cross-sectional analysis was conducted at the Department of Cardiology, Rehmat-ul-Lil-Alameen Institute of Cardiology, Lahore, from 19- 02-2021 to 18-08-2021. A total of 311 patients were enrolled in the study. Cases underwent an electrocardiogram, and high degree AV Block was labeled per operational definitions. The results were noted and recorded on the same proforma. The overall mean age of the patients was 55.6±8.4 years. Gender distribution of patients shows a higher frequency of 57.9% males compared to 42.1% females with a female-to-male ratio of 1:1.4. High degree of atrioventricular block was found among 5.8% of the total patients. Around 5.8% of AWMI patients presented with high-grade AV block in this study are in-concomitant with other studies. No association of risk factors (p-value >0.05) was presented regarding age, gender, DM, hypertension, dyslipidemia, family history of CAD, and smoking in this study.

Anand Ahuja
Rhythm Heart Institute, India

Biography

Anand Ahuja is a senior interventional cardiologist, holds 19 years of experience in invasive and non-invasive cardiology including thousands of coronary interventions, coronary imaging and CHIP cases. He serves on the editorial board, Journal of Cardiac Interventions. He is associate faculty, National Hypertension Working Group (a joint venture of European Society of Hypertension and Indian Society of Hypertension). He is regularly on the abstract grading panel, European Society of Cardiology Congress. He's been an investigator in several international randomized clinical trials. He is a faculty at several national and international cardiology conferences.

Factors Affecting Door to Balloon Time For Patients Presenting with ST Segment Elevation Myocardial Infarction for Primary Angioplasty in A Tertiary Care Centre in Western India

Methods: 192 patients presenting with STEMI for primary angioplasty during a 6-month period, were analysed with respect to their age, sex, geographical location (rural or urban), reference through a family doctor or not, diagnosis, presence of single or multi vessel CAD, time of presentation (day or night), procedure performed by a junior or senior cardiologist. The door to balloon time (DBT) was further split up as door to coronary angiography time, angiography to consent for primary PCI time and consent to balloon inflation time.

Observations: Mean DBT was 99.27 minutes, the highest being 288 minutes and lowest 20 minutes. Mean door to angiography time 46.4 was minutes, mean angiography to consent time 29.2 minutes and mean consent to balloon inflation time 23.6 minutes.

Interpretation And Analysis: The DBT was significantly higher for females, for rural patients, for primary PCI done during nighttime versus day (due to performing Cath lab team on duty not being on duty on campus). It was also higher for patients presenting directly, versus those referred by family doctors. It was higher for those with multi vessel than single vessel CAD. Age or gender bias, education and awareness levels, acceptance of procedure and financial status were determinants of differential door to balloon times. The DBT was similar with respect to age of the patient, type of infarct (anterior or inferior), whether a junior or senior cardiologist performed the primary PCI procedure. This was because only trained and experienced cardiologists capable of performing primary PCI in STEMI were assigned the responsibility.

Conclusion: DBT, an important determinant of primary PCI outcomes – in real world scenarios, is affected by multiple parameters beyond science. Due consideration of these factors and appropriate awareness and corrective measures will go a long way improving this vital Cath lab quality indicator and help translate scientific triumphs into actual patient benefits. Abstract should give clear indication of the objectives, scope, results, methods used, and conclusion of your work. One figure and one table can be included in your results and discussions.

Abir Tazim Chowdhury
Evercare Hospital Dhaka, Bangladesh

Biography

Dao Wen Wang, MD, PhD, is an academician of International Eurasian Academy of Sciences (IEAS), a Senior Specialist of Hubei Province. He is the Honorary Director of Department of Internal Medicine, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Director of Hubei Key Laboratory of Genetics and Molecular Mechanism of Cardiologic Disorders, and Director of Translational Medicine Center & Genetic Diagnosis Center. He is also Director of Hubei Provincial Quality Control Center of Fulminant Myocarditis, a Standing Committee member of Chinese College of Cardiovascular Physicians (CCCP), a committee member of Chinese Society of Internal Medicine, and chairman of Internal Medicine Section of Hubei Medical Association.

Impact of Intra-Aortic Balloon Pump Support on Early Outcomes in Coronary Artery Bypass Grafting for Patients with Reduced Left Ventricular Ejection Fraction: A Single-Center Study

Background: Despite advancements in surgical techniques, myocardial protection strategies, and postoperative care, coronary artery bypass grafting (CABG) in patients with reduced left ventricular ejection fraction (LVEF) poses significant challenges, leading to increased postoperative morbidity and mortality. This study aims to evaluate the early outcomes of patients with LVEF <35% undergoing on-pump CABG, focusing on the use of intra-aortic balloon pump (IABP) support and its impact on postoperative LVEF improvement.

Methods: Fifty-five patients with impaired LVEF who underwent isolated on-pump CABG at the Department of Cardiothoracic and Vascular Surgery in Evercare Hospital Dhaka, Bangladesh, between January 2020 and December 2023 were included. Fifteen cases received per-operative IABP support immediately after revascularization, meeting specific inclusion and exclusion criteria. Various preoperative, intraoperative, and postoperative variables were collected, analyzed, and compared.

Results: The mean age of patients was 57.81 ± 7.57 years, with 72% being male and 18% female. Antegrade cardioplegia was administered to all patients. The mean LVEF increased from 33 ± 1.38% preoperatively to 40.2 ± 3% six months postoperatively. However, postoperative complications included low cardiac output syndrome in 45% of patients, pulmonary complications in 15%, neurological complications in 2%, sternal wound infection in one case, atrial fibrillation in 10%, and acute kidney injury in five cases. In-hospital mortality occurred in two cases.

Conclusion: The results suggest that IABP support immediately following CABG in patients with reduced preoperative LVEF leads to improved postoperative LVEF and New York Heart Association (NYHA) functional class. This study sheds light on the potential benefits of IABP in enhancing early outcomes for this challenging patient population.

Nurun Nahar Fatema
Lab Aid Cardiac Hospital, Bangladesh

Biography

Nurun Nahar Fatema has passed MBBS in 1985 & FCPS in Paediatrics in 1995. She was trained in Prince Sultan Cardiac Center in Riyadh, KSA in Pediatric Cardiology from 1996 to 1998. Later trained in Australia, UK, USA, India etc. Awarded with FRCP and FACC in 2009 and FSCAI in 2011.Working as Chief Pediatric Cardiologist of CMH Dhaka since 1998 and HOD pediatrics since 2014. She is Head and prof of paediatrics of Armed Forces Medical College since 2014. Professor Fatema is the pioneer Pediatric Cardiologist of Bangladesh. She performed more than 9000 pediatric cardiac interventions and innovated many new techniques in cardiac interventions. Her NNF protocol for PPHN and cyanotic spell is widely used and saving life of hundreds of newborns and children. She has about 100 publications in different national and international medical journals. She has participated in more than hundred national and international seminar and presented scientific papers. She received highest national and peace time military award from her country for contribution to medical science.

Percutaneous Device Closure of Sub Aortic And Doubly Committed Ventricular Septal Defect (VSD) Case Series From Bangladesh

Introduction: VSDs constituted 20% to of congenital heart defects. Incidence of VSD is about 1.35 to 3.5/1,000 live births. With the advent of echocardiography, the recognition of VSDs has increased to 5 to 50/1,000 live births. Spontaneous closure of small defects occurs before the age of three in approximately 45% patients depending on types. Patient with significant hemodynamic effects or small defects with complications needs closure. Surgical closure is an established procedure yields excellent result so far. Percutaneous device closure of VSD was first reported in 1988 (Lock et al.) and we started device closure of VSD in 2004 in CMH Dhaka as first ever in Bangladesh. Percutaneous closure is a recent technology which offer less aggressive, minimally invasive and more comfortable alternative of VSD closure in acceptable varieties. Usually, Peri membranous VSD and Muscular Ventricular Septal Defect is suitable for device closure but Sub aortic VSD's are immediately below the aortic valve and have propensity to develop aortic valve prolapse and aortic regurgitation. Doubly committed sub-arterial VSDs are mostly associated with aortic valve prolapse, and these types are difficult to do Device closure and usually referred to the cardiac surgeon for surgical closure.

Conclusion: Device closure of Sub aortic & Doubly committed VSD is a complicated procedure than other VSD's. Vicinity of two valve apparatus, moderator band, chordatendinae and papillary muscle needs careful consideration. Encroachment of Aortic valve or tricuspid valve within device may lead to serious hemodynamic derangement. Our study proved percutaneous closure of subaortic and doubly committed VSD in selected cases are safe effective, feasible technique under TEE/TTE guide, without general anaesthesia and without need for stay in ICU. However large-scale study is still required for strong recommendation.

Chen Chen
Tongji Hospital, China

The Treatment Effects of Immunoglobulin on Fulminant Myocarditis (Fm) Was Controversial

Objective: The Treatment Effects Of Immunoglobulin On Fulminant Myocarditis (Fm) Was Controversial.

Methods: FM was induced in A/JGpt mice via coxsackievirus B3 (CVB3) intraperitoneally, and intraperitoneal injection of immunoglobin was daily administered. On the 7th day, cardiac structure and function were determined by echocardiography and cardiac catheterization. Meanwhile, single-cell RNA sequencing (scRNA-seq) was employed to evaluate CD45+ cells from the mouse hearts.

Results: Immunoglobin application dramatically reduced mortality and significantly improved cardiac function in mice with FM. ScRNA-seq revealed that immunoglobin treatment effectively modulated cardiac immune homeostasis, particularly attenuated the over-activated innate immune responses. At the cellular level, immunoglobin predominantly targeted Plac8+ monocytes and S100a8+ neutrophils, suppressed their pro-inflammatory activities, enhanced the antigen processing and presentation capabilities, thereby amplified the efficiency and potency of the immune response against virus. Modulation of multiple signal pathways, including relevant receptors on immune cells, directing the chemotaxis of inflammatory cells, antigen presentation, and anti-viral effects, mediated the benefits of immunoglobin. Finally, Bst2-ILT7 ligand-receptor mediated cellular interaction manipulated by immunoglobin was further confirmed *in vivo*.

Conclusion: Immunoglobin treatment could significantly attenuate FM-induced cardiac inflammation and improved cardiac function by extensively inhibiting over-activated innate immune response.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Keynote Day 2

Rahul G. Ingle
Datta Meghe College of Pharmacy, DMIHER, India

Biography

Rahul G. Ingle working as a Professor at Datta Meghe College of Pharmacy, Datta Meghe Institute of Higher Education and Research (Deemed to University), Sawangi (M), Wardha, India. He pursued his post doctorate from Zhejiang University, China. He has about three years of experience in the teaching undergraduate students and about six years of research experience at Roselabs, Ahmedabad (India), and Wockhardt Research Centre, Aurangabad (India). He has authored about 30 national and international publications and an Indian patent. He has presented papers at several conferences. He also serves as a reviewer of number of research journals.

The Stability and Delivery Challenges of Commercial Nucleic Acid Therapeutics

Nucleic acid (NA)-based biopharmaceuticals have emerged as promising therapeutic modalities. NA therapeutics is a diverse class of RNA and DNA and includes antisense oligonucleotides, siRNA, miRNA, mRNA, small activating RNA, and gene therapies. Meanwhile, NA therapeutics has posed significant stability and delivery challenges and is expensive. We discuss the challenges and opportunities for achieving stable formulations of NAs with novel drug delivery systems (DDSs). In addition, the current progress in the stability issues and the significance of novel DDSs associated with NA-based biopharmaceuticals, as well as mRNA vaccines. We also highlight the European Medicines Agency (EMA) and US Food and Drug Administration (FDA)-approved NA-based therapeutics with their formulation profiles. NA therapeutics could impact future markets if the remaining challenges and requirements are addressed.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Speakers Day 2

Fei Xu
Affiliated Hospital of Shandong University of Traditional Chinese Medicine, China

Biography

Fei Xu received her PhD in Chinese and Western Integrative Medicine from Fudan University, China. Professor Fei's major interests are Antitumor effects of TCM from Tumor immunology, Metabolism in tumor and immunology and Mechanical signaling in tumor and immunology. Her strategy involves research programs in basic biology and in clinical medicine. Her group is currently developing and testing natural small molecular compounds isolated from Chinese Herbs against NSCLC. A number of these small-molecule compounds have been experimentally verified and her group aim to progress these drugs to clinical trials.

Icariside II induced ferroptosis to suppress the progression of NSCLC through activation of the mitochondrial dysfunction

Aim: This study aimed to explore how icariside II (ICSII) induces ferroptosis in non-small cell lung cancer (NSCLC) via mitochondrial dysfunction.

Methods: RNA sequencing analysis was conducted to investigate the anti-tumor mechanism of ICSII. Cell viability was assessed using MTT assays. EdU proliferation and colony formation assays were employed to evaluate cell proliferation, and wound-healing and transwell assays were performed to assess cell invasion and migration. Mitochondrial membrane potential (MMP) and superoxide production were detected using JC-1 and Mitosox fluorescent dyes, respectively. Ferroptosis was evaluated by measuring levels of MDA, LDH, SOD, GSH, Fe2+, ROS, and ATP. Transmission electron microscopy (TEM) analysis was used to observe mitochondrial structure. Western blot (WB) and polymerase chain reaction (PCR) were employed to validate the expression levels of matrix metalloproteinases (MMPs), EMT markers, and GPX4, SLC7A11, ACSL3, ACSL4, HO-1, and NRF2. In addition, rescue experiments with the ferroptosis inhibitor ferrostatin-1 (Fer-1) were performed to further validate the effects of ICSII on ferroptosis. In vivo, a nude mouse xenograft model was constructed to verify the inhibitory effects of ICSII and the levels of ferroptosis in tumor tissues.

Results: ICSII exerted inhibitory effects on the cell viability, proliferation, invasion, and metastasis of NSCLC cells in vitro and in vivo. ICSII inhibited the expression of MMP2, MMP9, vimentin, and N-cadherin but increased the expression of E-cadherin. RNA sequencing analysis indicated that the anti-tumor effects of ICSII are mediated via ferroptosis-related pathways. It triggered ferroptosis by increasing the levels of lipid ROS, iron, MDA, and LDH while decreasing the levels of SOD, GSH, and ATP. ICSII also induced mitochondrial structural damage, as confirmed by increased mitochondrial ROS release, decreased MMP, and reduced mitochondrial ATP. The induction of ferroptosis by ICSII was associated with the proteins ACSL3, ACSL4, NRF2, HO-1, SLC7A11, and GPX4, modulating the GPX4/ACSL4/ACSL3 axis. Inhibition of ferroptosis by Fer-1 rescued ICSII-induced ferroptosis by ameliorating these indices.

Conclusion: Our findings demonstrated that ICSII restrained the proliferation, invasion, and metastasis of NSCLC cells by inducing ferroptosis mightily through the enhancement of mitochondrial dysfunction.

David Dobkin
LifeSci Capital LLC, United States

Biography

David Dobkin is the founder of Dobkin & Co. which was founded in 2015. He is currently the Chief Financial Officer & Director at LifeSci Acquisition III Corp. Mr. Dobkin's former jobs include Managing Director at Boustead Securities LLC, Chief Financial Officer & Director at LifeSci Acquisition Corp. From 2019 to 2020, Director at Petra Acquisition, Inc., and Chief Financial Officer & Director at Lifesci Acquisition II Corp. Mr. Dobkin's education includes an undergraduate degree from The Trustees of Columbia University in The City of New York in 2001 and a graduate degree from the University of Southern California in 2005.

The Five Reasons Biotech Companies Fail to Raise Capital and How to Fix Them

Successfully navigating the complexities of funding and managing a biotech startup requires a keen understanding of several critical factors. First, having a market-relevant indication is essential; pursuing a direction that lacks market relevance is a surefire way to doom a project from the start. Proper financial planning is also crucial, particularly in accurately assessing the amount of money needed to reach the finish line. Many companies mistakenly try to raise funds in stages, such as through a Series A round, to prove concept and achieve milestones. However, this piecemeal approach often leads to significant dilution, as investors are increasingly wary of early-stage companies. They understand that their stakes might be wiped out by the time the product reaches the market—if it ever does. Valuation and cap table management are other areas where companies frequently stumble. While fear of dilution is understandable, improper valuations can create severe cap table issues, forcing companies to give away too much equity during later funding rounds, leaving founders with little to show for their efforts. It's also vital to recognize when to quit. Many companies become too attached to their science, ignoring data that suggests a project should be abandoned. Knowing when to kill a project and return funds to investors can actually increase trust and willingness to invest in the future. Moreover, bringing in subject matter experts, especially in business and finance, is crucial. In early-stage companies, it's common for team members to wear many hats, but this can be detrimental when non-experts lead critical business functions. Engaging consultants or experts can accelerate deal-making and provide valuable insights. Finally, aligning the stage of the project with the appropriate type of capital is essential. Preclinical projects may find funding through grants or government agencies, while commercial-stage companies might access debt or other structures. Understanding these dynamics can significantly impact a company's success.".

Kyryl Bocharov
Luhansk Taras Shevchenko National University, Austria

Biography

Kyryl O. Bocharov is a scientist in the field of organic synthesis and medicinal chemistry. He is a third-year bachelor student of Applied Chemistry at IMC University of Applied Sciences Krems. Austria. He is defending his Bachelor Thesis on "Carbocyclisation of aldoses using NHC catalysis via Stetter reaction". He has many years of experience in organic synthesis of bioactive compounds, as well as in the use of modern methods of spectroscopic analysis and molecular docking. His research is focused on the development of new methods for the synthesis of organic compounds with high potential applications in medicine and academia.

The Synthesis Of 2-Amino-3- Benzylindolizines with Using the Mixture of Halides N-Benzyl-2-Halogenpyridines and Ch-Acids – Derivatives Acetonitrile

The chemistry of indolizine derivatives holds great promise for the development of potential new drugs. Both natural and synthetic indolizines have demonstrated a diverse range of pharmaceutical properties, from antitumour and antimycobacterial to antagonistic and antiproliferative activities. The discovery and strategic planning of new building blocks for the synthesis of potential indolizine compounds represents a significant breakthrough in improving and optimizing the chemical production of existing drugs. The multistep synthesis of indolizine derivatives was proposed and carried out based on Eugene Babaev's studies on the use of 2-halogenpyridinium salts. The synthesis included a modified method of benzyl bromide addition without the use of solvents, SNVin reaction with diverse symmetric and asymmetric C-nucleophiles (CH-acids) and intermolecular cyclisation by Thorpe-Ziegler. The synthesis of aryl and vinyl derivatives resulted in high yields, as confirmed and described by NMR 1H, 13C, LC-MS data and reported in our recent publication. Finally, we have developed and systematised an efficient method for synthesising potential new indolizine building blocks for further application in medicinal chemistry and cutting-edge drug design.

Natalia Chikurova
The Federal Research Centre of the Russian Academy of Sciences, Russia

Biography

Natalia Chikurova is an accomplished chemist who graduated from the Chemistry Department of Lomonosov Moscow State University in 2019 and earned her PhD in Chemistry in 2023. She currently serves as an assistant at the Department of Analytical Chemistry at Moscow State University, where she focuses on designing and applying new materials for HPLC separations. Additionally, she is a junior researcher at the Federal Research Centre "Fundamentals of Biotechnology" of the Russian Academy of Sciences. Her research is centered on developing novel stationary phases for hydrophilic interaction chromatography and reversed-phase chromatography, with applications in biochemistry. Natalia's work has been published in leading journals, including the Journal of Chromatography A and the International Journal of Molecular Sciences, both indexed in Scopus and WoS. She has also presented her findings at major conferences, such as HPLC 2023 in Düsseldorf.

Obtaining New Recombinant Cysteine Synthase a From *Limosilactobacillus* Reuteri LR1 and Studying its Properties

Cysteine synthase A (CysK) is an enzyme that catalyzes synthesis of L-cysteine from O-acetyl-L-serine and sulfide (primarily hydrogen sulfide) with PLP as cofactor. While its primary role in cysteine biosynthesis and sulfur assimilation is important for living organisms this enzyme also has potential secondary (or moonlighting) functions such as regulation of various gene expression by binding to DNA or RNA, cellular signaling by varying cysteine levels, or even affecting apoptosis and its pathways by differentiating in cysteine levels which is needed for glutathione synthesis necessary for protection from apoptosis induced by oxidation stress. One such CysK was found in *Limosilactobacillus reuteri* LR1 where it was expressed only in response to *Klebsiella pneumoniae* presence. In this work, the recombinant enzyme CysK from *L. reuteri* LR1 (the strain was kindly provided by the All-Russian Dairy Research Institute (VNIMI)) was obtained and its various properties were studied. The enzymatic activity of this CysK was studied using several different methods such as spectrophotometry and hydrophilic interactions liquid chromatography (HILIC) and the results were compared. Using the most efficient of these methods, kinetics and stability of this enzyme were also studied. Catalytically important amino acid residues were described using the model structure of this enzyme which was compared to other known structures of CysK from different organisms.

Leonid Shaposhnikov
The Federal Research Centre of the Russian Academy of Sciences, Russia

Biography

Leonid Shaposhnikov graduated from the Chemistry Department of Lomonosov Moscow State University, Moscow, Russia in 2019 and received his PhD in Chemistry in 2024. From 2021 he worked at the Department of Chemical Enzymology of Moscow State University as an assistant, and from 2023 he works as a junior researcher in the Federal Research Centre "Fundamentals of Biotechnology" of the Russian Academy of Sciences. Scientific work is devoted to the cloning, obtaining, and studying enzymes from various organisms for medicinal or biotechnological purposes. The main research results were published in journals indexed in Scopus and WoS and included in Q1 (Journal of chromatography A, International Journal of Molecular Sciences, Biomolecules).

Expression Optimization of the Recombinant Peptidase M23 from *Limosilactobacillus Reuteri* LR1

Metaloendopeptidase M23 of *Limosilactobacillus reuteri* LR1 belongs to the superfamily of metaloendopeptidases. These enzymes catalyze the cleavage of peptidoglycan and cleave either the N-acylmuramoyl-Ala bond between the cell wall peptidoglycan and the cross-linking peptide or a bond within the cross-linking peptide preferring the poly-Gly in this peptide making them preferably cleave gram-positive bacteria. These peptidases usually use Zn ions for catalysis. It was found that M23 peptidase is expressed in *Limosilactobacillus reuteri* LR1 due to presence of other microorganisms. This enzyme could be important for designing new antimicrobial agents especially against gram-positive pathogenic bacteria such as *Staphylococcus aureus* or Streptococcus pneumoniae. In this work we obtained recombinant M23 from L. reuteri LR1 (the strain was kindly provided by the All-Russian Dairy Research Institute (VNIMI)). We studied expression levels of this enzyme in E. coli and optimized it by removing signal peptide coding sequence from the enzyme's sequence. After the optimization of this enzyme's expression in E. coli it is now possible to obtain M23 in bigger quantities and use it as potential antibacterial agent. We've also completed preliminary test on non-pathogenic gram-positive bacteria such as B. megaterium and shown that M23 causes lysis of these bacteria.

Chun Yi
Hunan University of Chinese Medicine, China

Biography

Chun Yi is a Lecturer and the Deputy Director of the Department of Pathology at the School of Medicine, Hunan University of Chinese Medicine. She serves as an Executive Member of the Pathology Professional Committee of the Hunan Traditional Chinese Medicine Information Research Association and is a member of the Oncology Rehabilitation Committee of the Chinese Society of Gerontology and Geriatrics. Her primary research focuses on the role of non-coding RNA in tumorigenesis and the combined treatment of cancer using traditional Chinese and Western medicine. She has led one National Natural Science Foundation Youth Project, one project funded by the Hunan Provincial Department of Science and Technology, one Outstanding Youth Project by the Hunan Provincial Department of Education, and one project supported by the Changsha Municipal Natural Science Foundation. In addition to these roles, she has actively participated in numerous national, provincial, and university-level teaching and research projects. Dr. Yi has published over ten research papers in esteemed journals such as Oncogene, Drug Delivery and Translational Research, and others.

Armadillidium vulgare miR-2863 Inhibits Liver Cancer Cell Proliferation, Migration, and Invasion via the Bcl-2/Bax/Caspase-3 Signaling Pathway

Objective To explore the effects and underlying mechanisms of miRNA avu-miR-2863, derived from the traditional Chinese medicine Armadillidium vulgare, on the proliferation, migration, and invasion of HepG2 and MHCC97H liver cancer cells. Methods Small RNA sequencing identified miRNAs from Armadillidium vulgare, followed by screening candidate miRNAs. HepG2 and MHCC97H cells were divided into two groups: NC and avu-miR-2863. Cell proliferation, migration, and invasion were assessed using CCK8, scratch, and Transwell invasion assays. A 3D tumor sphere model was used to simulate the tumor microenvironment and evaluate tumor cell proliferation. Western blotting was performed to detect the expression of Cyclin D1, C-Myc, E-cadherin (E-ca), N-cadherin (N-ca), Vimentin (Vim), and matrix metalloproteinase 14 (MMP14). Bioinformatics analysis was conducted to predict target genes of avu-miR-2863, and KEGG and GO pathway enrichment analyses were performed to explore its mechanism of action. The expression of cleaved Caspase-3, Bax, and Bcl-2 was also detected by Western blotting. Cell apoptosis was assessed using flow cytometry, while mitochondrial fluorescence and intracellular reactive oxygen species (ROS) were detected using Mito-Tracker Red, Hoechst staining, and DCFH-DA assays. The expression of avu-miR-2863 in mouse blood was measured by qRT-PCR. Results High-throughput sequencing identified miRNA avu-miR-2863 from Armadillidium vulgare. Compared with the NC group, avu-miR-2863 inhibited the proliferation, migration, and invasion of HepG2 and MHCC97H cells ($P<0.01$) and reduced the size of 3D tumor spheres ($P<0.01$). avu-miR-2863 downregulated the expression of Cyclin D1, C-Myc, N-ca, Vim, and MMP14, while upregulating E-ca expression ($P<0.05$, $P<0.01$). Bioinformatics analysis suggested that avu-miR-2863 may exert its effects by regulating the Bcl-2 family-mediated apoptosis pathway. Compared to the NC group, avu-miR-2863 increased cleaved Caspase-3 and Bax expression and decreased Bcl-2 expression ($P<0.05$, $P<0.01$), resulting in enhanced apoptosis ($P<0.01$), reduced mitochondrial fluorescence intensity ($P<0.01$), and elevated ROS levels ($P<0.05$, $P<0.01$). qRT-PCR analysis demonstrated that miRNA avu-miR-2863 from Armadillidium vulgare could enter mouse blood through the gastrointestinal tract ($P<0.01$). Conclusion miRNA avu-miR-2863 from Armadillidium vulgare may inhibit the proliferation, migration, and invasion of liver cancer cells HepG2 and MHCC97H by regulating the Bcl-2/Bax/Caspase-3 signaling pathway, thereby exerting potent anti-liver cancer effects.

Yaqi Tang
Qingdao Women and Children's Hospital, Qingdao University, China

An Increase In The Cardiac Consultation Of Suspected Cardiac Involvement Symptoms With Unaltered Etiology During The Post-Covid-19 Period

Background: Hypertension is a global disease affecting one billion people and is the common risk factor for death throughout the world. Hypertension is a major risk factor and one of the leading causes of Cardiovascular Diseases (CVD) such as Acute Myocardial Infarction (AMI), stroke, heart failure and death. Patients make catastrophic out-of-pocket payments to manage this condition conventionally. In Africa some patients still visit traditional healers even after consulting with medical personnel and are apparently willing to pay out of pocket for Traditional Medicine (TM). This is done without the knowledge of health personnel, with the risk of incurring adverse drug-herb interactions. The aim of this study is to compare the costs of orthodox medicine and TM in the management of hypertension.

Methods: Questionnaire interviews of 122 participants, 104 hypertensive patients and 18 trad practitioners were conducted to obtain qualitative and quantitative data. Cost analysis between orthodox and TM treatment of hypertension was performed. Data was expressed in frequencies and percentages, used to determine significance.

Results:

1. We found that the cost of orthodox treatment of hypertension was almost two times higher than that of TM.

2. Age, self-rated health and self-employment positively influenced antihypertensive drug adherence.

3. Plants used by tradipractitioners had bioactive substances to counter hypertension.

Conclusion:

Hypertension treatment is less costly with TM than with orthodox treatment. TM can be a good alternative in managing hypertension

Mujeeb Ur Rehman
Afridi Medical Complex and Teaching Hospital, Pakistan

Modifiable Risk Factors associated with Post-Operative Bleeding and transfusion requirements in Cardiac Surgery

Objectives: In this study we determine the modifiable factors related to bleeding and transfusion in post-cardiac surgery patients who underwent open heart surgery.

Methods: This is a retrospective study that includes two hundred patients who had undergone open heart surgery (OHS) at Northwest General Hospital and Research Center from December 2018 to July 2021. Platelet count and haemoglobin level were measured in the pre-operative period.

Results: This study included both male and female patients. Postoperative platelets were counted as follow: 50-100 x109 L in 3.0% cases, 101-150 x109 L seen in 27.5% cases, and >150 x 109 L in 69.5% cases which required transfusion. We have also reported the increased requirement of transfusion of blood and blood products in patients with pre-operative haemoglobin (Hb) < 10 g/dl.

Conclusion: Correction of pre-op Hb, post-op platelet count and total bypass time are the significant and preventable parameters in patients undergoing cardiac surgery if proper pre-op assessment of the patient is performed.

Discussion: Bleeding Academic Research Consortium (BARC reported that 5 or more units of packed red blood cells (PRBCs) transfusions in 48 Hours and greater than 2 liters of chest tube output in 24 Hours are said to be significant in cardiac surgery patients.5 Patients that bleed actively can be taken to these summits rarely and early steps for optimization are usually necessary including the use of blood products, blood, medical optimization and reoperation. This is only possible with proper preoperative assessment of the patient.6 Correction of acidosis and hypothermia are the entity leading to decrease bleeding. The small bleeders can be tamponade by keeping the PEEP of around 10cm. These parameters can be achieved in order to assess the cause and status of profuse bleeding such as complete blood count, Thromboelastography, Prothrombin time, Activated thromboplastin time and fibrinogen levels.6,11 To improve the coagulation, Platelets transfusion, Fresh Frozen Plasma, and occasionally Desmopressin are the important parameters. Additional Protamine can be used to treat the Heparin rebounding phenomenon. Coagulopathy can be treated with a novel agent such as Recombinant factor VII. Aminocaproic acid and Tranexamic acid have frequent use too.19 The Commonly used and avoiding Preoperative associated factors leading to postoperative bleeding are Clopidogrel which should be stopped five days before the surgery, Ticagrelor which should be stopped three days before the operation, Heparin for acute coronary syndromes, low molecular weight heparin and patients on Warfarin or novel oral anticoagulants as these factors are not analyzed in our study. Common causes of excessive bleeding are extra cardiac bleeders, LIMA bed, and surgical bleeders from either distal or proximal anastomosis sites. That is why; it is quite complicated to ensure proper hemostasis.11

Binita Pokhrel
Palacky University Olomouc, Czech Republic

Biography

Binita Pokhrel is an Alumini of Kathmandu University, School of Science Department of Biotechnology. (Btech in Biotechnology 2012-2016; MS by research in Biotechnology 20172020) MS Pokhrel is Founder/ Managing Director at Purejoy Pvt Ltd.Pure Joy Pvt Ltd is a winery established April 2017 in Dhapakhel, Lalitpur. The company started with just two factory workers and now has 10 full-time employees and 18 contract-based employees. They have leased 21900 sq ft of land and constructed a factory building of 2400 sq ft. Pure Joy Pvt Ltd consumes 180 metric ton fruits annually, indirectly employing more than 50 other farmers with production of 150000 liters of wine annually. She has been involved in providing trainings in various organizations and places in Nepal regarding Biotechnological Practices in daily lives. Along with Pure joy she has been involved in various projects that involves agricultural and herbal products formulations.

Determination of Bioactive Compounds in Selected Medicinal Plants and their Activity Evaluation

Medicinal plants in particular have been used in traditional medicine since antiquity to maintain holistic health and have provided preventive and curative medicines in infectious conditions. Medicinal plants are rich in a wide variety of secondary metabolites such as tannins, terpenoids, alkaloids, and flavonoids, which are known to have immunomodulatory, antioxidant, antimicrobial, anti-diabetic and anticancer properties. The emergence of new infectious diseases, the resurgence of several infections that appeared to have been controlled and the increase in bacterial resistance have created the necessity for studies directed towards the development of new antimicrobials. Considering the failure to acquire new molecules with antimicrobial properties from microorganisms, there is a shift in focus: looking novel compounds showing antimicrobial activity in some exotic plants. This study investigated the phytochemical constituents, antioxidant potential and antibacterial properties of Nepalese medicinal plants using various analytical techniques. A phytochemical profile of methanol extracts of selected medicinal plants was established using High Resolution (HR)-LCMS. The extracts were tested against five different pathogenic microorganisms by agar diffusion method and showed considerable inhibition zones ranging from 9-14 mm at maximum concentration of 10 mg/further, phenol/flavonoid analysis revealed that the highest amount of total phenolic and total flavonoid content in methanol extract of KUPS_7(Rheum australe) with TPC value of 249.58 ± 7.73 Gallic acid equivalent µg/mg and TFC value of 480.84 ± 8.81 Rutin equivalent µg/mg. Moreover, all the samples showed 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity.

Further, a significant correlation was found between the antioxidant activity of extracts and their total phenolic and total flavonoid contents. Furthermore, LCMS analysis manifested presence of several compounds of pharmaceutical importance in the plant extracts. The results highlight the need for further research and bioprospecting of these plants as sources of new natural antioxidants and antibacterial agents.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Posters Day 2

Zarska Ludmila
Palacky University Olomouc, Czech Republic

Biography

Ludmila zarska studied Biophysics at Palacký University, Czech Republic, where she received her PhD degree in 2022 also. During her PhD studies she participated in five internships - The first at the University of Milan (Dr. Tommaso Santaniello). A six-month long internship at the University of Milan (Prof. Cristina Lenardi) and Foundation UNIMI – Filarete. A three-month internship at the Department of Inorganic Chemistry, Charles University, CZ (Prof. Jiří Mosinger). A four-month internship at CNR-ISTEC Institute of Science and Technology of Ceramic Materials in Faenza, Italy (Dr. Silvia Panseri). She also worked at the Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic in Prague (group of biological models with a specific specialization in polymer systems for tissue engineering). Her scientific activity focuses on the preparation and characterization of nanoparticles for biomedicine, photodynamic therapy (PDT), AFM microscopic imaging and biological in-vitro assays. She is the author and co-author of 10 publications.

Innovative 2D nanoplatforms for advanced multi-drug delivery in future cancer treatments

Current cancer treatment modalities often use combinations of multidrug chemotherapy, radiotherapy or surgery. Unfortunately, the efficacy of chemotherapy is commonly hindered by severe side effects and drug resistance. Nanocarriers offer promising solutions by enhancing drug accumulation in target cells and reducing toxicity. We developed a graphene-oxide-based (GO) 2D nanoplatform functionalized with highly branched polyethylene-glycol (PEG) to carry multiple drugs. This study utilizes Pt-based complexes and doxorubicin (DOX) to treat glioblastoma, breast carcinoma and osteosarcoma cell lines, models of aggressive tumors. Our results show that the GO@PEG nanoplatform achieves therapeutic effects at lower concentrations of administered and delivered drugs (15 μM Pt-drug, 0.6 μM DOX) compared to free drugs. This strongly suggests improved drug transport and accumulation. In 3D cell models with MG63 osteosarcoma cells, the nanoplatform displayed a reduced diffusion profile, indicating targeted delivery potential. Additionally, the GO@PEG nanoplatform demonstrated significant inhibition of cellular proliferation and migration, particularly in the highly invasive breast carcinoma (MDA-MB-231 cell line). Enhanced cellular uptake was more evident in osteosarcoma cells compared to glioblastoma, likely due to their metabolic differences. Overall, the GO@PEG nanoplatform is a versatile and potent system for cancer therapy, offering a tailored approach to overcome the limitations of traditional chemotherapy by targeting different cancers more effectively and safely.

Chaloupkova Zuzana
Palacky University Olomouc, Czech Republic

Biography

She graduated in Biochemistry at Palacky University in Olomouc, Czech Republic and in 2013 She received my MSc. In 2014 she joined the BioMed group led by Doc. Ranc in RCPTM in Olomouc. In 2018, she received my PhD degree in Physical Chemistry at the same institution. During my PhD study, she completed a 3-month internship at the University of Trieste under the supervision of Dr. Fornasaro. Since 2021 she became a junior researcher at CATRIN (Czech Advanced Technology and Research Institute) where she is still working. she is the author of 1 patent, first-author of 5 papers and co-author of other publications

Graphene derivatives as a way to understand cancer cell processes for potential targeted therapies

Introduction: Graphene derivatives belong to the group of 2D nanomaterials, which has attracted attention in many industries such as chemical, electronics and medical in recent years. Due to their unique properties such as strength, hydrophilicity and large specific surface area with the possibility of functionalization, graphene derivatives are particularly attractive materials in biomedicine as a candidate for use in targeted drug delivery. In conjunction with Raman mapping and MCR analysis, it is also possible to understand the processes tumor cells respond to these derivatives.

Objective: The aim of this work is to study the presence of graphene derivatives in cancer cells by Raman spectroscopy, moreover the fate of graphene derivatives within a single cell based on mapping and its evaluation by MCR analysis. As well as the study of these derivatives after functionalization for possible targeted drug delivery.

Conclusion: MCR-Raman spectroscopy could be used as a highly complementary technique to fluorescence labeling-based methods and MCR imaging could become a tool for exploratory single-cell studies because MCR analysis faithfully mimics the structure of the analytical measurement, and the MCR-Raman method offers a promising approach to determine graphene derivatives within single cells simultaneously. Since MCR-Raman spectroscopy can be used to observe peak shifts within a cell due to the interaction of graphene derivatives with individual cellular components, there is great potential for studying changes in the consequences of this interaction of graphene derivatives within a cell and also as a diagnostic analytical method for the detection of graphene derivatives with bound drug in drug delivery applications.

Fang Jingshuai
Southeast University, China

Biography

Jingshuai Fang, Ph.D. candidate at the School of Biological Science and Medical Engineering, Southeast University, China. His research primarily focuses on identifying biomarkers for immunotherapy in patients with advanced gastric cancer.

Plasma small RNAs as predictive and monitoring biomarkers for immunotherapy response in advanced gastric cancer

Immune checkpoint inhibitors (ICIs) have significantly prolonged survival in various malignancies, establishing a new standard of care for advanced gastric cancer (aGC). Currently, existing biomarkers are insufficient for effectively stratifying true responders, highlighting the urgent need to identify novel biomarkers. Our analysis reveals that responders experience improved overall and progression-free survival. To identify determinants of response, we examined the small RNA (sRNA) profiles of 140 plasma samples from aGC patients treated with immunotherapy, utilizing a training cohort (n = 49) and a validation cohort (n = 42). In this study, we identified three significantly altered sRNAs from the baseline plasma RNA sequencing of patients in the training cohort. Specifically, responders demonstrated upregulation of hsa-miR-3916 and downregulation of hsa-miR-181d-5p. A baseline prediction model was trained using these two features and subsequently validated on the validation cohort. The area under the curve (AUC) for the training cohort was 0.77 (95% CI; 0.62–0.93), while the AUC for the validation cohort was 0.83 (95% CI; 0.71–0.96). Additionally, we incorporated PD-L1 CPS positivity alongside these two features to refine the predictive model utilizing the same methodology. The AUC for the training cohort was 0.82 (95% CI; 0.68–0.96), and the AUC for the validation cohort was 0.83 (95% CI; 0.70–0.97). Additionally, immunotherapy was found to elevate responders' plasma levels of hsa-let-7f-2-3p and reduce levels of hsa-miR-320c, which were associated with improved prognosis; conversely, it decreased non-responders' plasma levels of mature-tRNA-Asn-GTT, indicating worse outcomes. Our findings provide insight into the sRNA features associated with response to combination immunotherapy in patients with aGC and provide biomarkers potentially relevant for selecting patients who may derive greater benefit from immunotherapy.

Elian Rakhmanaliev
One BioMed, Singapore

Biography

Elian Rakhmanaliev is Director of R&D at One BioMed. Elian is a Biotechnology professional with over 23 years of international academic and industrial experience and expertise in genetics and molecular diagnostics. For the past 14 years his main focus was on developing NGS-, qPCR- and IA-based IVD tests, platforms, nucleic acid extraction systems and POCT devices for molecular diagnostics. Elian obtained his MSc in Molecular Genetics from Moscow State University, and his PhD in Genetics from Vavilov Institute of General Genetics. He completed postdoctoral fellowships in Oncology at Karolinska Institute and in Immunogenetics at Johns Hopkins University.

A Novel Automated Microfluidic Cartridge-Based Platform for Nucleic Acid Extraction

Microfluidic technologies revolutionized the field of biomedical research by transforming bulky and expensive laboratory equipment into easy to use, cost-effective miniaturized systems. However, the most common nucleic acid (NA) extraction methods require either centrifugation or magnets or pumps that make development of microfluidic system for NA extraction challenging. We developed an automated cartridge-based microfluidic Xceler8™ system for NA extraction based on a novel proprietary reversable solid-phase chemical binding technology. This technique utilizes a unique feature of dimethyl adipimidate dihydrochloride, a cross-linking reagent, known to covalently link the free amino groups. The amidine bonds formed are reversable which is used to capture and release NA by changing buffering conditions. Performance of the Xceler8™ system was evaluated by comparing with two widely used automated NA extraction systems and manual kits. DNA and RNA were extracted from bacteria, animal and plant tissue, PBMCs, cell culture and whole blood. The purity, integrity and yield of the extracted NA were assessed using spectrophotometers, agarose gel, PFGE, qRT-PCR, short- and long-read sequencing. The system has demonstrated incredible efficiency in isolating high quality ultra-High Molecular Weight (HMW) DNA and its compatibility with Oxford Nanopore and PacBio library preparation kits. Overall results show either equivalency or superiority of the Xceler8™ system for majority of samples compared to the reference methods. This simple beads, membrane, and alcohol-free solid-phase extraction method enables gentle isolation of NA from various sample matrices. The Xceler8™ system thus appears as an efficient and reliable solution for NA extraction, especially for isolation of ultra-HMW DNA.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Keynote Day 3

Abhishek Gupta
University of Wolverhampton, United Kingdom

Biography

Abhishek Gupta qualified as a pharmacist in 1998 in India. He graduated with a B.Sc degree with Biochemistry in 2001 and completed an MSc in 2004. Abhishek qualified the National Eligibility Test (NET) in 2003. He was awarded the Junior Research Fellowship (JRF) in 2004 organised by the University Grant Commission (UGC), India. Following this, Abhishek became a Researcher at the University of Wolverhampton where he gained an MPhil in 2008. He completed his PhD at the University of Wolverhampton in the area of the development and characterisation of biosynthetic hydrogels for wound management applications. Abhishek completed the Postgraduate Certificate in Academic Practice in Higher Education and is a fellow of Higher Education Academy (FHEA). Before taking the position of Senior Lecturer in the School of Pharmacy at the University of Wolverhampton within the Faculty of Science and Engineering (FSE), Abhishek served as a Teaching Associate in FSE and as a Lecturer in Anatomy and Physiology in the Faculty of Education, Health, and Wellbeing (FEHW).

A Novel Green Chemistry Approach for Silver Nanoparticles Production for Intended Pharmaceutical Applications

Attributing to their high surface area to volume ratio, silver nanoparticles (AgNP) have attracted application in pharmaceutical nanotechnology sector1. In this study, the novel green synthesis of AgNP using aqueous curcumin:hydroxypropyl-β-cyclodextrin (CUR:HPβCD) complex is accomplished. CUR:HPβCD complex was produced using CUR and HPβCD (by solvent evaporation method2. A novel green chemistry approach was developed to produce CUR reduced silver nanoparticles (cAgNP). An aqueous solution of CUR:HPβCD was added dropwise to AgNO3 aqueous solution under boiling conditions in the dark, with continuous stirring and boiling for 3 hours. The resulting cAgNP were characterised to assess their potential for wound management, particularly in controlling microbial infections.

Bio-reduction of AgNO3 occurred with CUR:HPβCD resulting in cAgNP with the average size of 42.71 ± 17.97 nm and zeta potential of -20.1 ± 0.702 mV. TEM revealed a homogenous thin layer of capping agent. cAgNP were loaded in cellulose-based biosynthetic hydrogel matric to produce advanced wound dressings. cAgNP demonstrated a broad-spectrum antimicrobial activity on the tested Gram-positive and negative bacterial strains.

The results confirmed the successful synthesis of cAgNPs using the green chemistry approach. Beyond their broad-spectrum antimicrobial and antioxidant properties, the hydrogels exhibited promising physicochemical characteristics. Their high moisture content and good transparency further support their potential use in managing chronic wounds. Ongoing research is focused on enhancing their haemocompatibility.

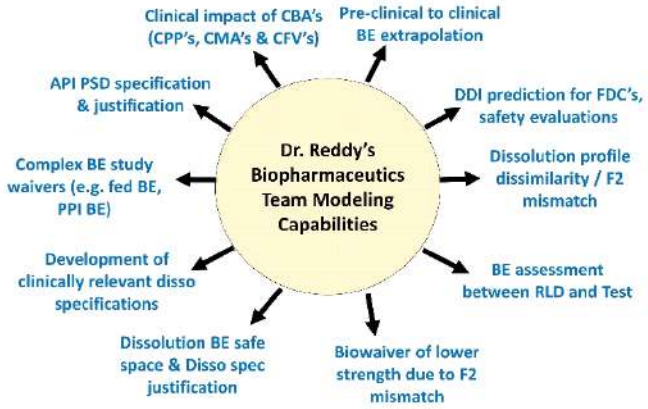
Sivacharan Kollipara
Dr. Reddy's Laboratories Ltd., India

Biography

Sivacharan Kollipara is the Team Lead in Biopharmaceutics at Dr. Reddy's Laboratories Limited (DRL), Hyderabad. He oversees biopharmaceutics evaluations, bioequivalence risk assessments, and predictions for conventional and complex generic products. He also specializes in PK modeling, simulations, and novel PBPK/PBBM modeling approaches for regulatory justifications. With 16 years of experience, he has held key positions at Novartis Healthcare and Ranbaxy Research Laboratories. He holds a Master's in Pharmaceutical Sciences from BITS Pilani and is pursuing a Ph.D. He has authored/co-authored ~30 publications and is active in research areas like PBPK modeling, virtual bioequivalence simulations, and bio-predictive methodologies.

Impact of PBPK and PBBM in Generic Drug Product Development

Generic formulation development aids in faster availability of cheaper and effective medicines into the market. In order to achieve this objective, it is imperative that the product development should be expedited and all novel approaches in order bring medicine as early as possible into the market should be considered. Approaches such as physiologically based pharmacokinetic (PBPK) and physiologically based biopharmaceutics (PBBM) modeling aids to speed up the generic product development by obtaining confidence into the bioequivalence studies and waiving the unnecessary clinical studies in humans. In this context, this oral presentation highlights the use of PBPK and PBBM in generic product development.



A general workflow for the development of such modeling approaches with incorporation of model inputs will be discussed. Integration of critical model input, i.e. dissolution in the context of in vivo relevance will be discussed in detail. Biopredictive ability of the QC media in conjunction with in vivo relevance will be portrayed with an example of dataset. Further, case examples with respect to waiving off fed bioequivalence studies in generic product development will be discussed in detail. Successful biowaivers in case of f2 similarity factor mismatch with help of PBBM modeling will be discussed with case examples. Application of PBBM to justify dissolution specifications for an extended-release product will be discussed in detail. Evaluation of impact of critical bioavailability attributes (CBA) through PBBM will be discussed in detail. Various approaches for establishing in vitro in vivo correlation (IVIVC) for extended-release products for establishing dissolution safe space will be discussed with case examples. Overall, this presentation aims to summarize current understanding of PBPK and PBBM approaches to speed up the generic product development will be portrayed in this oral presentation.

Rashid Mahmood
Surge Laboratories Private Limited, Pakistan

Biography

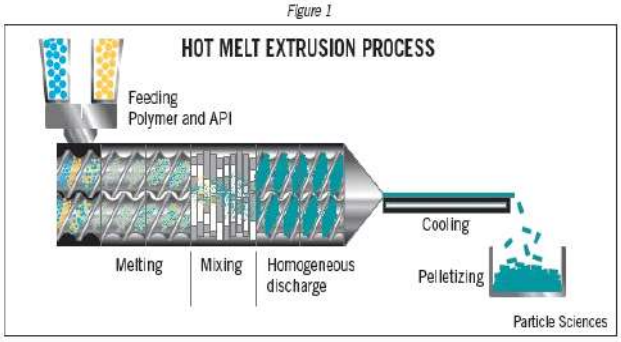
Rashid Mahmood has Master Degree in Analytical Chemistry and MS in Total Quality Management. He has 20 years of experience of Pharmaceutical Quality Operations and has participated in many international conferences as a keynote speaker. He has presented various talks in USA & China on Cleaning Validation, cGMP Guidelines and Quality Risk Management. Currently he is working as a General Manager Technical Operations for Surge Lab. (Manufacturer of Micro-encapsulated APIs, Liquid & Dry Powder Parentrals) which is the best export-oriented company in Pakistan.

Hot Melt Extrusion an Emerging Drug Delivery Technology

Hot melt extrusion (HME) is emerging technology which is gaining high importance in the pharmaceutical industry as a novel technique for the preparation of various dosage forms and drug delivery systems, for example granules and sustained release tablets. It is a fast-growing technology platform that is utilized to solve difficult formulation challenges, primarily in the area of solubilization. Due to fast processing, high degree of automation, absence of solvents, simple and continuous operation and ability to process poorly compactable material into tablet form are some of the main advantages offered over conventional processing by this emerging technique. Applications of HME in pharmaceutical industry continues to grow and recent success of this technique have made it a useful tool of consideration as a drug delivery solution.

The use of hot-melt extrusion (HME) within the pharmaceutical industry is steadily increasing, due to its proven ability to efficiently manufacture novel products. HME involves the application of heat, pressure and agitation through an extrusion channel to mix materials together, and subsequently forcing them out through a die. Twin-screw extruders are most popular in solid dosage form development as it imparts both dispersive and distributive mixing. It blends materials while also imparting high shear to break-up particles and disperse them. HME extrusion has been shown to molecularly disperse poorly soluble drugs in a polymer carrier, increasing dissolution rates and bioavailability

Figure 1



Annie Frelet-Barrand
FEMTO-ST Institute, France

Biography

Annie Frelet-Barrand studied biochemistry at the University of Franche-Comté (France) and was graduated as MS in 1998. In 2006, she received her PhD degree on membrane proteins (MP) characterization at the Institute of Plant Biology, Zurich. During her postdoctoral fellowship (CEA Grenoble, France), she developed L. lactis system for functional characterization of MPs. In 2009, she became CNRS Researcher at CEA Saclay, studying MPs involved in liver detoxification. In 2015, she integrated the Institute FEMTO-ST and is now producing and characterizing by biological, biochemical and biophysical techniques diverse (nano)biological elements from MPs, vesicles to bacteria and mammalian cells. She published 33 research articles including 4 book chapters (h=16).

Lactococcus Lactis as a Promising Factory to Express & Characterize Membrane Proteins

Membrane proteins (MPs) perform a wide variety of functions vital to the survival of organisms. Involved in numerous pathologies, they are important drug targets. In spite of their functional and biotechnological importance, their study remains difficult due to their hydrophobicity and low abundance in cells. Their overexpression in heterologous systems is mandatory for their detailed structural and functional characterization. However, this strategy leads to numerous obstacles such as their toxicity to hosts and the quality of the MP produced in these systems, especially for structural studies.

The antimicrobial peptide nisin is commonly used to control pathogenic microorganisms in dairy foods and presents anti-cancer properties and, at sub inhibiting concentrations, through the NICE (Nisin Controlled gene Expression) system for expression of proteins, either soluble or membrane of diverse origins and functions.

Using this tightly controlled gene expression system, in the last twenty years, more than 100 MPs were expressed allowing either their functional and/or structural characterization [1,2]. Recently, one eukaryotic membrane protein was expressed at a relatively high expression yield and allowed the formation of intracellular vesicles [3].

In conclusion, L. lactis represents a promising and interesting system for expression of functional proteins, including MPs. This system could be used in the future for expression of MPs of pharmaceutical interest and for biotechnological purposes.

Masihuddin Jaigirdar
Mj Pharmconsult, United States

Biography

Masihuddin A. Jaigirdar is an expert in pharmaceutics with a distinguished professional background. He has served as a Product Development Scientist and is a retired Senior Reviewer CMC Chemist at the FDA's Center for Drug Evaluation and Research (CDER), specifically within the Office of Pharmaceutical Quality (OPQ) and the Office of Pharmaceutical Manufacturing Assessment (OPMA-III). His wealth of experience in the field makes him a highly knowledgeable presenter. He will be delivering this presentation at the Conference on Pharmaceutics in Singapore on September 23, 2024.

Generics Product Development & its Introduction for the US Market Solid Dosage (Tablet & Capsules)

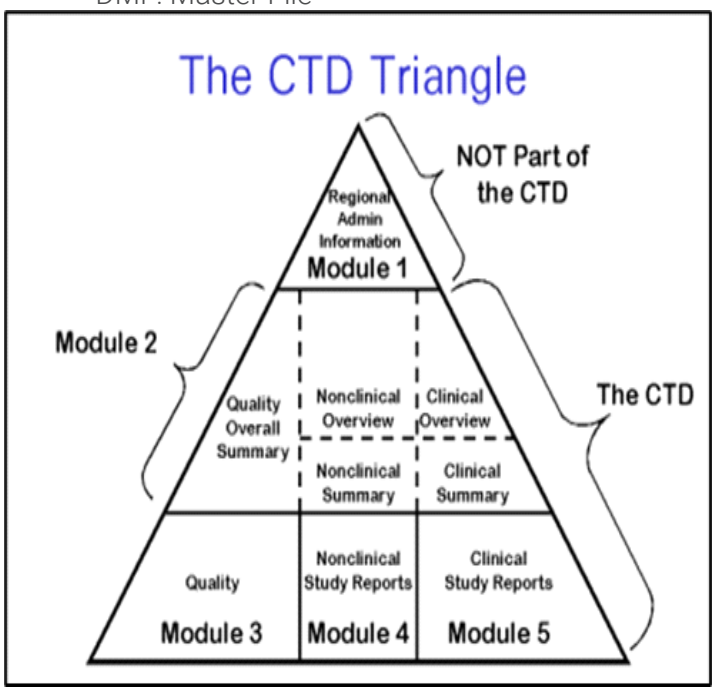
Background:

- In streamlining efforts, structured electronic submission approach has been employed and FDA has identified and prioritized pharmaceutical quality/chemistry, manufacturing and controls (PQ/CMC) information that is intended to be submitted in the Module 2 & 3 of the Common Technical Document (CTD) as defined by the International Council for Harmonization's (ICH) M4 Common Technical Document (CTD).
- However, currently what is submitted in Module 3 of the (eCTD) is not necessarily comprehensive to cover all eCTD product quality information, only those concepts that were considered agreeable to structuring and would bring value to the quality review process.

Common Technical Document

The submission of structured data in a standardized format should increase the efficiency of the regulatory agency's (FDA) review of PQ/CMC data contained in the Module 3 of eCTD submissions for the following type of applications.

- NDA: New Drug Application.
- IND: Investigational New Drug.
- BLA: Biologics License Application .
- ANDA: Abbreviated New Drug Application .
- NADA: Animal Drug Application.
- ANADA: Abbreviated New Animal Drug Application.
- INAD: Investigational New Animal Drug (INAD),
- GINADs: Generic Investigational New Animal Drugs.
- DMF: Master File



7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Speakers Day 3

Syed Asif Shah
Nabiqasim Group of Industries, Pakistan

Biography

Syed Asif Shah has done Masters in Chemistry and MBA in Marketing. He is a Trainer and Seasoned Quality professional having 18 years of diversified experience in pharmaceutical industry including Quality Assurance, QMS, Compliance, Audits, Data Integrity, Sterility Assurance, Aseptic and terminal Sterile techniques, Validation, Quality Control and Training,

Currently working in Nabiqasim industries as Group Head of QA, Managing Nabiqasim(pvt)Ltd and Surge Laboratories. Nabiqasim industries, Manufacturer of Oral solid dosage, Oral liquid, Suspension, sachets, derma, Cephalosporin, Hormones, Sterile eye drops, Lyophilize, laxative enema products whereas Surge laboratories is a manufacture of Microencapsulated APIs, Liquid & Sterile Dry Powder Parenteral. Nabiqasim group is one the best export-oriented organization of Pakistan

Quality Risk Management System in Pharmaceuticals

In the pharmaceutical industry every product and every process associated with risks. To maintain product quality throughout the product life cycle, too much time and resources are allocated. Risk is described in - recent guidance as a combination of the probability of occurrence of harm and the severity of that harm. The Quality Risk Management (QRM) approach initiated by regulatory agencies with recognized management tools along with support of statistic al tools in combination allows for a risk-based approach to quality management, thus ensuring that resources are deployed in a timely and expeditious manner to areas that need them most. QRM improves risk awareness and accelerates detection of potential issues by analyzing and comparing existing data from a quality perspective to manage product quality, manufacturing processes, validation and compliance within a risk-based Quality Management System. In addition, quality risk management improves decision making if a quality problem arises. It should include systemic processes designated to co-ordinate, facilitate and improve science-based decision-making with respect to risk. Quality Risk Management can be applied not only in the manufacturing environment, but also in connection with pharmaceutical development and preparation of the quality part of marketing authorization dossiers. The guideline applies also to the regulatory authorities in the fields of pharmaceutical assessment of the quality part of the marketing authorization dossier, GMP inspections and the handling of suspected quality defects. ICH Q9 - Quality Risk Management provides an excellent high-level framework for the use of risk management in pharmaceutical product development and manufacturing quality decision making applications. It is a landmark document in acknowledging risk management as a standard and acceptable quality system practice to facilitate good decision-making with regard to risk identification, resource prioritization and risk mitigation / elimination, as appropriate

Zubair Ameen
Khwaja Fareed University of Engineering and Information Technology, Pakistan

Biography

Zubair Ameen is a student at Khwaja Fareed University of Engineering and Information Technology in Rahim Yar Khan, Pakistan. With a background in agriculture and social media, Zubair explore the intersection of Agricultural Biotechnology, Biological Sciences, and Digital Marketing. His research focuses on discovering new possibilities in Agricultural Biotechnology to introduce sustainable agriculture in Pakistan. Zubair has a proven track record of teamwork and leadership skills. He presented a thematic poster on "CRISPR Cas-9" and secured first position in his department. Currently, he is seeking opportunities for fellowships to pursue his master's studies abroad and fulfill his dreams.

Unlocking the Potential of Agro-Biotechnology for Sustainable Natural Product Development

Agro-biotechnology has emerged as a powerful tool for revolutionizing the way we develop and produce natural products. By harnessing the latest advances in genetic engineering, bioprocessing, and bioinformatics, scientists can now design and produce high-value natural products with enhanced efficacy, sustainability, and environmental stewardship. This review focuses on the intersection of agro-biotechnology and natural products, exploring innovative approaches to: Develop novel natural products with improved yield and quality, enhance crop resilience and disease resistance through genetic engineering, discover new bioactive compounds with medicinal and industrial applications and ensure sustainable agricultural practices and environmental stewardship. My review highlights the vast potential of agro-biotechnology in addressing global challenges, including climate change, food security, and human health. By integrating cutting-edge technologies with natural product development, we can unlock new possibilities for sustainable development, economic growth, and human well-being. This abstract showcases the transformative power of agro-biotechnology in shaping the future of natural product development, paving the way for a more sustainable, equitable, and prosperous world.

Milad Eidi
Tarbiat Modares University, Iran

123VCF: An Intuitive and Efficient Tool for Filtering VCF Files

Background: The advent of Next-Generation Sequencing (NGS) has catalyzed a paradigm shift in medical-genetics, enabling the identification of disease-associated variants. However, the vast quantum of data produced by NGS necessitates a robust and dependable mechanism for filtering irrelevant variants. Annotation-based variant filtering, a pivotal step in this process, demands a profound understanding of the case-specific conditions and the relevant annotation instruments. To tackle this complex task, we sought to design an accessible, efficient and more importantly easy to understand variant filtering tool.

Results: Our efforts culminated in the creation of 123VCF, a tool capable of processing both compressed and uncompressed Variant Calling Format (VCF) files. Built on a Java framework, the tool employs a diskstreaming real-time filtering algorithm, allowing it to manage sizable variant files on conventional desktop computers. 123VCF filters input variants in accordance with a predefined filter sequence applied to the input variants. Users are provided the flexibility to define various filtering parameters, such as quality, coverage depth, and variant frequency within the populations. Additionally, 123VCF accommodates userdefined filters tailored to specific case requirements, affording users enhanced control over the filtering process. We evaluated the performance of 123VCF by analyzing different types of variant files and comparing its runtimes to the most similar algorithms like BCFtools filter and GATK VariantFiltration. The results indicated that 123VCF performs relatively well. The tool's intuitive interface and potential for reproducibility make it a valuable asset for both researchers and clinicians.

Conclusion: The 123VCF filtering tool provides an effective, dependable approach for filtering variants in both research and clinical settings. As an open-source tool available at https://project123vcf.sourceforge.io, it is accessible to the global scientific and clinical community, paving the way for the discovery of diseasecausing variants and facilitating the advancement of personalized medicine.

Suchita Waghmare
Rashtrasant Tukadoji Maharaj Nagpur University, Iran

Biography

Suchita G. Waghmare is currently working as full time Research Scholar in Department of Pharmaceutical Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra, India. She has been awarded with "Mahatma Jyotiba Phuley Research Fellowship 2022". She is having 8 years working experience in academic as Associate Professor at Hi-Tech College of Pharmacy, Chandrapur , Maharashtra, India. She has completed her Masters in Industrial Pharmacy from Sudhakarao Naik Institute of Pharmacy, Pusad,Maharashtra, India. She is having more than 18 national and international publications. She published 02 books and 04 books chapters. She has delivered 01 guest lecture and attended 45 conferences/workshop and FDPs. She has presented papers in conferences via 04 Oral and 04 Poster Presentations. She has Completed Credit Courses from SWAYAM-NPTL. She was Local Organizing Committee Member for Indian Science Congress 2023 and XIX National Scientific Conclave 2023. She is actively working in the field of Polymeric Material Development, Nanoparticulated Drug Delivery System and 3D Bioprinting. She is an active life member of PCI and Indian Science Congress.

Design And Fabrication of Magnetic Fe_3 O_4-Qsm Nanoparticles Loaded with Ciprofloxacin as A Potential Antibacterial Agent

In this investigation, we have synthesized magnetite nanoparticles (NPs) coated with quince seed mucilage (QSM) as a natural, biocompatible, and biodegradable component and loaded them with ciprofloxacin (CIP) to act as an antibacterial agent. The structural, magnetic, physicochemical, colloidal, and antibacterial properties of the samples were tested using various characterization tools such as XRD, TEM, FE-SEM, VSM, FT-IR, UV–Vis, DLS, BET, and disk diffusion for testing the antibacterial properties. XRD and VSM results confirmed the fabrication of a highly pure cubic spinel phase for . The results of FE-SEM and TEM analyses indicate a spherical morphology of the magnetite NPs with a mean diameter of about 13 nm, and the results of DLS show a hydrodynamic diameter of 81.9 to 119.2 nm. The zeta potential value for the magnetic NPs was as high as − 55.2 mV, indicating suitable colloidal stability of the NPs for biological applications. The VSM results indicate a high saturation magnetization of the samples as well as a small coercivity and Remanence of the samples, which indicate the superparamagnetic property of the NPs. It was also indicated that the amount of drug adsorbed on the magnetic nanoparticles at different pH values (5.5 to 6.5) is about 85 %. It was likewise detected that the synthesized @QSM-CIP NPs possess antibacterial activity against standard strains of both Gram positive and Gram-negative bacteria (minimum inhibitory concentration = 100 ppm). The overall findings imply that the proposed magnetic NPs with antibacterial activity are promising for biomedical applications.

Maryam Moazami
Pasteur Institute, Iran

Biography

Maryam Moazami Goodarzi has a Ph.D in Medical Biotechnology. She has more than 10 years of experience in bacterial and mammalian cell culture and the process optimization for purification of various recombinant proteins including monoclonal antibodies (mAbs), vaccines, and so on. In her recent research, she has optimized the purification process for industrial recombinant hepatitis B surface antigen (hepatitis B vaccine) using 2 multimodal chromatography resins in both bind-elute and flowthrough purification modes utilizing the design of experiment (DOE) approach. This research tried to achieve an efficient and more cost-effective consistent process with unaffected product's critical quality attributes (CQAs). She has several national patents and ISI-published articles on the purification of recombinant proteins with multimodal chromatography resins.

Complexities and Potential of Multimodel Resins to Overcome Protein purification challenges

Increasing attention has been paid to the purity of therapeutic proteins imposing extensive costs and challenges to the downstream processing of biopharmaceuticals. One of the efforts, that has been exerted to overcome such limitations, was developing multimodal or mixed-mode chromatography (MMC) resins. However, protein adsorption-desorption in mixed-mode resins becomes complicated due to several interactions with the ligand's functional groups. In this work, the explanation of practical and key aspects of downstream processing of recombinant proteins with or without MMC resins will be debated. Then, after complete elucidation of the potential of MMC resins, the effects of frequently used additives and their possible interactions during the purification process, the critical characteristics of common product-related, host-related, and process-related impurities will be discussed. Due to such complexities, the design of experiment (DOE) will be introduced as a suitable tool for developing a meticulous optimization process in protein purification using multimodal resins.

Attila Szenasi
University of North Carolina at Chapel Hill, United States

Biography

Attila Szenasi is a postdoctoral research associate at the University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, specializing in chemotherapy resistance in luminal breast cancer. He earned his Ph.D. in Biological Sciences from the University of Liverpool, focusing on therapeutic approaches to reverse platinum-resistant ovarian cancer. He holds an MBA in Entrepreneurship and Innovation from the University of London and an MSc in Nanomedicine from Swansea University. Dr. Szénási has extensive experience in medicine, nanomedicine, and translational drug development, with a strong background in collaborative research and innovation.

SOD1 is a Druggable Target in Platinum-Resistant Ovarian Cancer

Acquired platinum resistance poses a significant therapeutic impediment to ovarian cancer patient care, accounting for more than 200,000 deaths annually worldwide. We previously identified that overexpression of the antioxidant superoxide dismutase 1 (SOD1) in ovarian cancer is associated with a platinum-resistant phenotype via conferring oxidative stress resistance against platinum compounds. We further demonstrated that enzymatic inhibition using small-molecule inhibitors or silencing of SOD1 via RNA interference (RNAi) increased cisplatin sensitivity and potency in vitro. We launched this study to explore the potential therapeutic applications of SOD1 silencing in vivo in order to reverse cisplatin resistance using a graphene-based siRNA delivery platform. PEGylated graphene oxide (GO) polyethyleneimine (GOPEI-mPEG) nanoparticle was complexed with SOD1 siRNA. (Figure 1) GOPEI-mPEG-siSOD1 exhibited high biocompatibility, siRNA loading capacity, and serum stability, and showed potent downregulation of SOD1 mRNA and protein levels. We further observed that cisplatin and PEI elicited mitochondrial dysfunction and transcriptionally activated the mitochondrial unfolded protein response (UPRmt) used as a reporter for their respective cytotoxicities. SOD1 silencing was found to augment cisplatin-induced cytotoxicity resulting in considerable tumour growth inhibition in cisplatin-sensitive A2780 and cisplatin-resistant A2780DDP subcutaneous mouse xenografts. Our study highlights the potential therapeutic applicability of RNAi-mediated targeting of SOD1 as a chemosensitizer for platinum-resistant ovarian cancers.

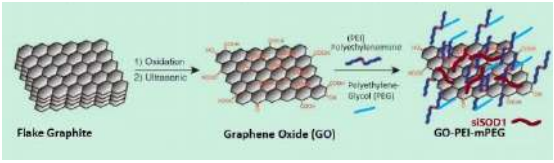


Figure 1: Schematic representation of GOPEI-mPEG preparation. mPEG was directly conjugated to PEI instead of graphene, which created a tunable system to control the ζ-potential of the nanoparticle. Linear methyl polyethylene glycol (mPEG) was conjugated to GOPEI through EDC chemistry, and siRNA molecules were allowed to bind GOPEImPEG electrostatically. Schematic diagram illustrating UPRmt activation by cisplatin, graphene and cationic polymers leading to mitochondrial dysfunction and subsequent mito-nuclear signalling.

Aghapy Yermans Yakoup
Zewail City for Science and Technology, Egypt

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, I have 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. I am working currently as an R&D specialist in Pharmaplast company. I am interested in finding new solutions to get rid of multi-drug-resistant bacteria and inventing new compounds that can be alternatives to antibiotics. Also, I am interested in the medical microbiology field. In the future, I am 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.

Characterization, Antibacterial, and Cytotoxic Activities of Silver Nanoparticles Using the Whole Biofilm Layer as a Macromolecule in Biosynthesis

Recently, multi-drug resistant (MDR) bacteria are responsible for a large number of infectious diseases that can be life-threatening. Globally, new approaches are targeted to solve this essential issue. This study aims to discover novel antibiotic alternatives by using the whole components of the biofilm layer as a macromolecule to synthesize silver nanoparticles (AgNPs) as a promising agent against MDR. In particular, the biosynthesized biofilm-AgNPs were characterized using UV-Vis spectroscopy, electron microscopes, Energy Dispersive X-ray (EDX), zeta sizer, and potential while their effect on bacterial strains, and normal cell lines was identified. Accordingly, biofilm-AgNPs have a lavender-colored solution, spherical shape, with a size range of 20–60 nm. Notably, they have inhibitory effects when used on various bacterial strains with concentrations ranging between 12.5 and 25 µg/mL. In addition, they have an effective synergistic effect when combined with phage ZCSE9 to inhibit and kill Salmonella enterica with a concentration of 3.1 µg/mL. In conclusion, this work presents a novel biosynthesis preparation of AgNPs using biofilm for antibacterial purposes to reduce the possible toxicity by reducing the MICs using phage ZCSE9.

Yacob Mathai
Marma Health Centre, India

Biography

Yacob Mathai is a practicing physician in the field of healthcare in the state of Kerala in India for the last 36 years and very much interested in basic research. His interest is spread across the fever, inflammation and back pain. He is a writer. He already printed and published Ten books on these subjects. He also wrote hundreds of articles in various magazines. have published 11 articles on fever in various journals

Paracetamol is the Most Unscientific and Dangerous Drug for Fever. Anyone can Create a Fever within Hours using Antipyretic Objects

Most people mistakenly equate high temperature with fever and often take paracetamol to lower it, thinking it's dangerous. However, a high temperature, known as hyperthermia, is not the same as a fever. Fever is caused by inflammation, while hyperthermia results from external heat. Antipyretics like paracetamol reduce fever by lowering temperature, but they don't address inflammation, potentially prolonging illness and increasing the risk of death. Paracetamol, an antipyretic, reduces prostaglandin E2—a substance crucial for inflammation control and blood flow, much like an airbag in a car protects during accidents. Eliminating prostaglandin E2 with paracetamol can worsen inflammation, reduce blood flow, and lead to complications. Scientific evidence suggests that paracetamol depletes protective substances like glutathione, interferon, and platelets, weakening the immune system. This misuse of paracetamol for fever, rather than hyperthermia, is fundamentally flawed and can be dangerous, as it exacerbates inflammation and compromises the body's natural defenses. Prescribing paracetamol for fever, therefore, may be harmful, as it diminishes key substances that support recovery and survival.

Anirudh Kumar
Central Tribal University of Andhra Pradesh, India

Biography

Dr. Anirudh Kumar, PhD, is a research faculty member in the Department of Botany, Central Tribal University of Andhra Pradesh (CTUAP), Vizianagaram, AP, India. He has research experience of more than 12 years in the area of plant molecular biology and plant pathology. He has received M.Sc. and Ph.D. degree from University of Hyderabad (India's Institution of Eminence), and Postdoc from CCCM, Hyderabad, India and ARO, Israel. His current research interests span from antioxidants studies of medicinal plants to plant pathology. He is author and co-author of several papers on different aspect of plant biology. He also teaches courses for B.Sc., M. Sc. and Ph.D. degree. For the past few years, his research group is trying to studies phytochemical profiles of native plants, antimicrobial properties, and innate immunity of rice against pathogens such as Xoo.

Priming with Plant Extracts Induces Defense in Host Plant Against Pathogen

Rice Bacterial Blight (BB), caused by Xanthomonas oryzae pv. oryzae (Xoo), is deemed as one of the most severe diseases of rice. Agricultural practices have often relied upon bactericides to reduce BB infections. However, excessive utilization of bactericides in the past has led to environmental contamination and elevated bacterial resistance. Plant elicitors are ecologically safe biological pesticides, have been demonstrated to enhance disease resistance by inducing defense-related enzymes and improving photosynthetic efficiency. In the current study, the efficacy of Hedychium coronarium methanol and aqueous extract was assessed through various physiological and biochemical analysis. The results suggest that plants treated with the extract have a better ability to protect against BB disease by inducing resistance against the pathogen. However, the control group exhibited significantly higher membrane damage due to greater Xoo infections and necrosis. Moreover, the metabolites were identified through GC-MS analysis, disclosed the existence of multiple antimicrobial compounds in the extract.

Additionally, the in vitro antibacterial property of the extract was confirmed, as a higher zone of inhibition was observed with ME against Xoo. A molecular docking study further revealed that certain metabolites, such as mucic acid and 3-phenyllactic acid of H. coronarium, could target the D-alanine D-alaine ligase A (DdlA) and Peptide deformylase (PDF) proteins of Xoo, thereby hindering its growth. Thus, priming rice plants with H. coronarium flower extract could induce defense responses by modulating photosystem II and enzymatic antioxidants, making it a budding source of antimicrobial metabolites.

Hadi Alizadeh
Tarbiat Modares University, Iran

Biography

Hadi Alizadeh is a passionate researcher with a Master's degree in Molecular Genetics from Tarbiat Modares University. Hadi's academic journey began with a Bachelor's degree in Cellular & Molecular Biology from North Tehran Azad University, where he distinguished himself as one of the top scorers in the university entrance exam, ranking among the top candidates out of 40,000 participants.

With a deep interest in cancer biology, bioinformatics, and machine learning, Hadi is committed to advancing research in these fields. His academic and research pursuits are driven by a desire to contribute to understanding complex biological systems and developing innovative solutions for healthcare.

Targeting Mmps to Overcome Cisplatin Chemoresistance in Ovarian Cancer: Insights from Rna-Seq Analysis and 3d Structural Alignment

Background: Ovarian cancer remains a leading cause of gynecological cancer-related deaths, with cisplatin-based chemotherapy as the cornerstone of treatment. However, the efficacy of cisplatin is often hampered by the development of chemoresistance, limiting patient outcomes. Matrix metalloproteinases (MMPs) are implicated in cancer progression and chemoresistance. Targeting MMPs with selective inhibitors has shown promise in preclinical studies, enhancing cisplatin-induced cell death in resistant ovarian cancer cell lines. The A2780 ovarian cancer cell line, characterized by its acquired cisplatin resistance, provides a valuable model for studying these mechanisms.

Methods: We conducted RNA-seq analysis on the cisplatin-resistant A2780 ovarian cancer cell line (SRP105266). Standard bioinformatics pipelines, including quality control, genome alignment, and differential expression analysis, identified significant upregulation of MMP1, MMP3, MMP10, and MMP12. A homology tree constructed using sequence alignment tools and phylogenetic analysis revealed close evolutionary relationships among these MMPs. High-resolution crystallographic 3D structures of the MMPs were obtained from the Protein Data Bank (PDB). Pairwise structural alignments using molecular modeling software identified conserved domains and structural motifs critical for the enzymatic activity of these MMPs.

Results: RNA-seq analysis revealed significant upregulation of MMP1 (6.7-fold), MMP3 (5.3-fold), MMP10 (1.9-fold), and MMP12 (4.7-fold) in the cisplatin-resistant A2780 cell line compared to controls ($p < 0.001$). Homology tree analysis indicated a conserved structural framework among these MMPs. 3D structural alignment pinpointed several conserved domains suitable for targeted drug development, including a highly conserved catalytic domain and a zinc-binding motif (HEL/IGHSLGLXH) crucial for proteolytic activity.

Conclusion: Our findings suggest that targeting the upregulated MMP gene family in cisplatin-resistant A2780 ovarian cancer cells holds promise for overcoming chemoresistance. Developing specific MMP inhibitors, in combination with cisplatin, could enhance therapeutic outcomes. Further studies will explore the combined treatment effects, aiming to provide new strategies for combating cisplatin resistance in ovarian cancer.

Maryam Fazeli
Motamed Cancer Institute, ACECR, Iran

Biography

Maryam Fazeli, PhD, is a virologist specializing in oncolytic virotherapy and emerging viral diseases. She completed her PhD in Medical Virology at Modares University in 2015, focusing on the development of therapeutic DNA vaccines. Over the years, she has gained extensive expertise in viral immunology, bioinformatics, and advanced techniques such as CRISPR/Cas9 gene-editing. Currently, Dr. Fazeli is a researcher at the ATMP Department, Breast Cancer Research Center, Motamed Cancer Institute, ACECR, Tehran. Her research centers on designing oncolytic adenoviruses targeting HPV-related cancers and exploring innovative therapeutic approaches for diseases like COVID-19 and rabies. She has contributed to numerous international and national projects and has published extensively in peer-reviewed journals. Teaching and mentoring are also key aspects of her career, and she is passionate about advancing the field of virology and developing novel treatments for viral-driven cancers

Design and Synthesis of Oncolytic Adenovirus Encoding Hsp70 Adjuvant Fused to E6 and E7 Antigenic Sequences of Human Papillomavirus Types 16 and 18, and Investigation of its Therapeutic Effects in a Cervical Cancer Mouse Model

Cervical cancer remains a major global health concern, primarily driven by persistent infection with high-risk human papillomavirus (HPV) types, notably HPV 16 and 18. In this study, we designed and synthesized an oncolytic adenovirus encoding HSP70 adjuvant fused with E6 and E7 antigenic sequences from HPV types 16 and 18. This novel construct aims to enhance the immune response against HPV-driven cervical cancer. We evaluated the therapeutic efficacy of this adenovirus in a mouse model of cervical cancer, using C57BL/6 mice implanted with TC-1 tumor cells. The adenovirus was administered intratumorally, and its impact on tumor growth, immune activation, and overall survival was assessed. Key findings demonstrate significant tumor regression and enhanced infiltration of cytotoxic T lymphocytes (CTLs) into the tumor microenvironment. Moreover, mice treated with the oncolytic adenovirus showed prolonged survival compared to control groups. These results indicate that the engineered adenovirus holds potential as a promising therapeutic strategy for cervical cancer. Future studies will focus on optimizing dosing regimens and further elucidating the underlying immune mechanisms.

Bahareh Behrouznejad
ACECR Institute of Higher Education, Iran

Biography

Bahareh Behrouznejad is an M.Sc. Biotechnology graduate from Royan Research Institute and an R&D researcher in the realm of Biomedical Sciences and Tissue Engineering at the Isfahan University of Medical Sciences. She has extensively studied and worked in some interdisciplinary subfields such as Cellular and Molecular Biology, Microbial Biotechnology, and Tissue Engineering, which has equipped her with a raft of up-to-date knowledge and an advanced skill set of multiple cellular and molecular analyses as well as materials characterization techniques. Vast research and consistent work on biopolymer hydrogels, nanocomposite scaffolds, and drug delivery through nanomaterials for enhanced cell-material interactions and advanced tissue regeneration, made her proficient in scaffold fabrication, biomaterial development, and drug delivery systems (DDS). Hence, her research interests mainly relate to tissue engineering, biofabrication, bioprinting, and nanomedicine. Moreover, several international conference presentations and high-impact journal publications demonstrate her scientific dissemination attitude.

Towards a Sustainable Biomolecule Delivery Platform Employing Carbon Nanotubes-Fortified Bacterial cellulose/Gelatin Nanocomposites

In pursuing biopolymer substrates for drug conveyance in tissue engineering, bacterial cellulose (BC) with remarkable features and an extracellular matrix-resembled constitution has emerged as a promising candidate. Drug delivery scaffolds mostly suffer from the simultaneous potential of long-term controlled cargo release and outstanding tissue repair efficiency, therefore, BC composition with other nano/biomaterials has become imperative to achieve its desired attributes in drug delivery. To address this, our study attempts to use an in-situ fabrication method for the creation of a multifunctional BC/gelatin (BC/Gel) scaffold reinforced with carboxylic multi-walled carbon nanotubes (cMWCNTs) as a sustainable delivery model of biomolecules. This work aims to evaluate the physico-chemical, mechanical, and biological characteristics of obtained nanocomposites and explore their suitability for rendering a sustainable delivery platform for tissue regeneration purposes. Initially, in-situ BC/Gel hydrogels were attained employing Gluconacetobacter xylinus (G. xylinus)-inoculated 0.5wt/v% gelatin-contained culture media after 21 days incubation at 30 °C and purification by 0.1 M NaOH. Subsequently, CNTs were loaded with human serum albumin (HSA) as a drug model, with an optimized nanoparticle-to-protein ratio of 1:5 and loading efficiency of 90.0±1.0% before amalgamation within BC/Gel scaffolds. According to diverse characterization tests (Fig. 1), the nanocomposition improved the surface area and overall porosity of BC/Gel up to 58.0±1.3m²/g and 85.5±1.1%, respectively. Likewise, significant wettability of 44.0±0.1° and dramatic biodegradation rate of 36.9±1.2% were other exceptionally gained attributes. Meanwhile, with a Zero-order kinetic mechanism, CNT-HSA integration facilitated the controlled release of 56.0±0.9% HSA over 7 days. Drug-carrying nanocomposites showcased >70% viability and favorable cell morphology during in vitro cellular trials using Human Foreskin Fibroblasts (HFFs). Consequently, this nanocomposite scaffold can be customized with many protein biomolecules as a novel targeted delivery platform for prospective

tissue engineering applications such as wound healing, guided tissue/bone regeneration (GTR/GBR), or cell cultivation.

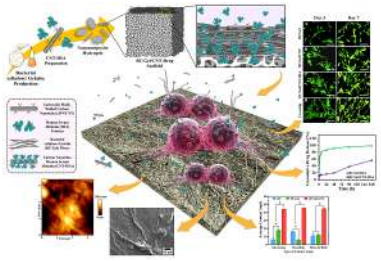


Fig. 1. Fabrication procedure and various characterizations of bacterial cellulose/gelatin nanocomposites reinforced with carboxylic carbon nanotubes.

7th International Conference and Exhibition on

Pharmaceutics and Drug Delivery Systems

23-25 September 2024 | Village Hotel Changi, Singapore

Poster Day 3

Haytam Kasem
Azrieli College of Engineering Jerusalem, Israel

Biography

Haytam Kasem received his master's degree in mechanical engineering from the University of Haute Alsace, Mulhouse, France, in 2004. He received his Ph.D. degree in tribology of composite materials from the University of Orleans, France, in 2008. He joined the Tribology Laboratory at Technion, Israel, in 2012 and the Azrieli College of Engineering Jerusalem (JCE), Israel, in 2013. His current positions are Associate Professor, Head of the Department of Mechanical Engineering, and Head of the Tribology and Microstructure Laboratory at the JCE. His research areas cover the tribology of bionic microstructures, biotribology, mechano chemical surface treatment, and the tribology of friction brakes.

Investigation of the Tribological Properties of Cartilage-on Cartilage and Cartilageon- Glass Under Different Liquid Lubricants

Any future development of new artificial lubricants for osteoarthritis treatment necessities full characterization of lubrication properties in terms of boundary lubrication joint, mobility, and frictional behavior. However, tribology has not yet been integrated with the clinical reality of worn particles present in synovial fluid and their impact on osteoarthritic joints. Part of the problem relates to the tribological approach adopted to study friction by applying inadequate testing methods such as pion-on-disc or block-on-ring testers. Furthermore, most of the studies reported in the literature so fare consider biological cartilage sample rubbing against a smooth and hard counter face, such as glass, covered with the lubricant liquid. This configuration suffers of lack of imitation of physiological conditions of biological joints. To bridge the gap, in the present study synovial fluid containing, or not, worn particles was studied using a customized test-rig (tribometer). This device enables the contact to be open at the end of each friction cycle and to simulate more closely the natural knee joint contact conditions. Moreover, friction tests are performed with cartilage-on-cartilage configuration and the outcome results are compared to those obtained with the classical cartilage-on-glass configuration. Results show clearly that opening the contact at the end of each friction cycle enables the lubricant to re-cover the rubbing surfaces, which allows to better illustrate the effect of the worn particles present in the lubricant. In addition, cartilage-on-cartilage configuration leads to lower but more irregular friction compared with that of cartilage-on-glass configuration tested under the same lubricants and experimental conditions

SCHOLARS CONFERENCES

UPCOMING CONFERENCES

6th Edition International Conference on
Catalysis and Chemical Engineering
March 19-20, 2025 | Amsterdam, Netherlands
catalysis@scmeetings.org
https://scholarsconferences.com/catalysis-frontiers/

World Congress on **Advances in Preventive Medicine and Public Health**
July 07-08, 2025 | Prague, Czech Republic
preventivemedicine@frontiersmeetings.org
https://scholarsconferences.org/preventive-medicine-healthcare/

3rd Edition World Congress on **Otology, Rhinology &Laryngology**
16-17 July 2025 | Vienna, Austria
otorhino@scholarconferences.org
https://otorhinocongress.org/

World Congress on **Advances in Applied Science and Engineering**
September 15-17, 2025 | Singapore
https://scholarsconferences.org/applied-science-engineering/