COGNITION CONFERENCES
INNOVATION AT SCIENTIFIC GATHERINGS

Joint Event On

Stem Cell
Cell Science
Cancer
Microbiology and
Biosensors

November 18-20, 2024
Hampton By Hilton Rome North Fiano Romano, Rome, Italy

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SCIENTIFIC PROGRAM

DAY 01 - November 18, 2024
Hampton By Hilton Rome North Fiano Romano, Rome, Italy

8:30 - 9:10 Registration and Opening Ceremony

Keynote Forum-1

9:10 - 9:50	**Sleep Medicine in the Age of Artificial Intelligence** **Maha Alattar,** *Virginia Commonwealth University, USA*
9:50 - 10:30	**Orthobiologics for musculoskeletal disorders: Active agents, mechanisms of action and dosing as key parameters towards clinical protocols** **Nathan Katz,** *Jointechlabs inc., USA*
10:30- 11:10	**NF-kB as a central regulator of inflammation after brain injury** **Elizabeth Wright Jin,** *Thomas Jefferson University, USA*

Refreshments and Networking Break 11:10 - 11:20

11:20 - 12:00	**Wearable Technology and Bioelectronic Epidermal Devices for Guiding Human Health and Performance** **Dhruv Seshadri,** *Lehigh University, USA*

Speaker Session

12:00 - 12:30	**Mechanism of muscle atrophy in a normal-weight rat model of type 2 diabetes established by using a soft-pellet diet** **Sayaka Akieda-Asai,** *University of Miyazaki, Japan*
12:30 - 13:00	**Shellac and locust bean gum coacervated curcumin, epigallocatechin gallate nanoparticle ameliorates diabetic nephropathy in a streptozotocin-induced mouse model** **Tanmoy Bera,** *Jadavpur University, India*
13:00 - 13:30	**Supplementation of hesperidin improves valproic acid-induced decreases in hippocampal neurogenesis linked to changes of neural stem cells and memory in rats** **Jariya Umka Welbat,** *Khon Kaen University, Thailand*

Networking Lunch Break 13:30 - 14:10

14:10 - 14:40	**Efficacy of Nebulized GM-CSF Inhalation in Preventing Oral Mucositis in Patients Undergoing Hematopoietic Stem Cell Transplantation: A Retrospective Study** **Fenglian Luo,** *Chongqing Medical University, China*
14:40 - 15:10	**Two directional trafficking of the IFT25 protein in the developing mouse sperm flagella** **Zhibing Zhang,** *Wayne State University, USA*
15:10 - 15:40	**Two mouse Spag6 genes coordinate to control sperm formation and male fertility** **Wei Li,** *Tongji Medical University, USA*
15:40 - 16:10	**Human umbilical cord-derived mesenchymal stem cells incombination with small extracellular vesicles improve survivaland dramatically reduce fibrosis and cirrhosis in Wistar ratsreceiving CCL4** **Navneet Boddu,** *Southern California Pain Consultants Inc., USA*

Refreshments and Networking Break 16:10 - 16:20

16:20 - 16:50	**Lessons from global alterations observed in both the genetic and epigenetic components of multicellular organisms during the multistep processes of carcinogenesis.** **Jacques de Gerlache,** *French Association of Systems Science, France*
16:50 - 17:20	**Safety and Preliminary Efficacy of SHED-CM in the Treatment of Amyotrophic Lateral Sclerosis (ALS)** **Yasuhiro Seta,** *Hitonowa Medical Clinic, Japan*
17:20 - 18:00	**Role of Mesenchymal Stem Cells in Treatment of Systemic illness** **Navneet Boddu,** *Southern California Pain Consultants Inc., USA*

Networking and Day Closing

SCIENTIFIC PROGRAM

DAY 02 - November 19, 2024
Hampton By Hilton Rome North Fiano Romano, Rome, Italy

Keynote Forum-2

9:00 - 9:40	**Demonstration of Safety and Efficacy for Treating Knee Osteoarthritis with a Combined Intraosseous and Intraarticular Delivery of Autologous Bone Marrow Concentrate at Two-Year Follow-up** Mitchell B. Sheinkop, *Rush University, USA*
9:40 - 10:20	**Oncogenic Acceleration of Epithelia Driven by Alternative Splicing of the Stem Cell Factor p63** Makoto Senoo, *Boston University, Japan*
10:20 - 11:00	**Successes and Failures of the Utilization of CRISPR/Cas9 Technology for Humans** Lev Fedorov, *Oregon Health & Science University, USA*

Refreshments and Networking Break 11:00 - 11:10

Speaker Session

11:10 - 11:40	**Systemic Lupus Erythematosus: Mesenchymal Stem Cell Therapy, Anti-Inflmmatory And Peripheral Tolerance Effects** M Julia Barbado, *Rio Hortega University Hospital, Spain*
11:40 - 12:10	**Use of Autologous Biologics for Treatments spine and joint disorders** Navneet Boddu, *Southern California Pain Consultants Inc., USA*
12:10 - 12:40	**Assessing the Impact of Bisphenols and Perfluoroalkyls on Human Pluripotent Stem Cells: Implications for Health, Development and Fertility** Giulia Gaggi, *University G. D'Annunzio of Chieti-Pescara, Italy*
12:40 - 13:10	**Application of machine learning to high-content microscopy reveals phenotypic changes in human dopaminergic neurons exposed to endocrine disruptors** Andrea Di Credico, *University "G. D'Annunzio" of Chieti-Pescara, Italy*

Networking Lunch Break 13:10 - 14:00

14:00 - 14:30	**Mobilization of Endogenous CD34+/CD133+ Endothelial Progenitor Cells by Enhanced External Counter Pulsation for Treatment of Refractory Angina** Joseph Tartaglia, *University of Rome, School of Medicine ,USA*
14:30 - 15:00	**A Critical Analysis of All-Cause Deaths during COVID-19 Vaccination in an Italian Province** Alberto Donzelli, *Allineare Sanità e Salute,Italy*
15:00 - 15:30	**Redox-probe free immunosensors towards point-of-care detections for clinical diagnostic** Rosa Fireman Dutra, *Federal University of Pernambuco, Brazil*
15:30- 16:00	**Mft1, identified from a yeast genome-wide screen, mediates cell cycle arrest to counteract quinoxaline-induced toxicity** Dindial Ramotar, *Hamad Bin Khalifa University, Qatar*

Refreshments and Networking Break 16:00 - 16:10

16:10 - 16:40	**Breast Cancer Knowledge, Attitude, and Screening Practices among Hispanic/Latino Women** Harrindra Seepersaud, *Walden University, USA*
16:40 - 17:10	**The siRNA-based blockade of oncogenes and other positive regulator of carcinogenesis in gastric adenocarcinoma: What's next step?** Dyar Mudhafar Salman, *Hawler Medical University, Iraq*
17:10 - 17:40	**Advances in immunotherapy for metastatic prostate cancer** Zhang Jingsong I, *University of South Florida College of Medicine, USA*
17:40 - 18:10	**CYP1B1 and CYP2B6 expression in a cohort of women with breast cancer and the correlation with tumor aggressiveness and treatment outcomes** Alexandra Acco, *Federal University of Paraná, Brazil*

Networking and Day Closing

SCIENTIFIC PROGRAM

DAY 03 - November 20, 2024
Hampton By Hilton Rome North Fiano Romano, Rome, Italy

Keynote Forum-3

9:00 - 9:40	**Challenges in Handling Pre-harvest Microbial Food Safety Hazards in Fish** Upali Samarajeewa, *University of Peradeniya,Canada*
9:40 - 10:20	**Microfluidic Biosensors for Simultaneous and Multiplex Detection of Animal Health, Welfare and Food Safety Biomarkers in the Meat Chain** Ivan Nastasijevic, *Institute of Meat Hygiene and Technology, Serbia*

Speaker Session

10:20 - 10:50	**Breathalyzer for rapid, direct detection of SARS-CoV-2 viral particles in exhaled breath** John R. Cirrito, *Washington University School of Medicine, USA*

Refreshments and Networking Break 10:50 - 11:10

11:10 - 11:40	**Textile-based and food-based sensors for biomedical applications** Goran Stojanović, *University of Novi Sad, Serbia*
11:40 - 12:10	**Development of a Bio-Field Effect Transistor Platform for Detecting miR-155 Under Physiological Conditions** Francesco Lavecchia, *Università RomaTre, Italy*
12:10 - 12:40	**Structural characterization of Astragalus polysaccharide-D1 and its improvement of low-dose metformin effect by enriching Staphylococcus lentus** Jianglan Long, *Capital Medical University, China*
12:40 - 13:10	**The role of the infectious diseases department in the management of antimicrobial agents: Prospective study of medical advices given by the Infectious Diseases Department of the Mohammed VI University Hospital, Marrakech** Noura Tassi, *King Mohammed VI University, Morocco*

Networking Lunch Break 13:10 - 14:00

14:00 - 14:30	**Trends in immunological markers of transfusion transmissible infections among blood donors in Mamfe District Hospital, Southwest Cameroon** Sen Claudine Henriette Ngomtcho, *University of Dschang, Cameroon*
14:30 - 15:00	**Detection of infectious disease biomarkers using electrical and optical based biosensors** Anil-Koklu, *ASELSAN Inc, Turkey*
15:00-15:30	**Epigallocatechin Metabolite Produced by Human Intestinal Bacteria Modulates microRNA Expression and Prognosis Biomarkers in Colon Cancer Cells** Emmanuele Andrade, *University of Shizuoka, Japan*
15:30 - 16:00	**In vitro and in vivo screening of bacterial species from contaminated soil for heavy metal biotransformation activity** Tinatin Doolotkeldieva, *Kyrgyz National Agrarian University, Kyrgyzstan*

Refreshments and Networking Break 16:00 - 16:20

Poster Presentations 16:20 - 17:20

Po-001	**Polysaccharides extracted from tucum-do-cerrado fruits (Bactris setosa Mart) have antineoplastic effects in mice and preserve the hepatic metabolism** Alexandra Acco, *Federal University of Paraná, Brazil*
Po-002	**Antibacterial properties and endothelial protection of Omental Adipose Tissue- Derived Mesenchymal Stem Cell Conditioned Medium** Adeline Castro, *Tsukuba University, Japan*
Po-003	**A rare presentation of pulmonary hypertension** Nazek Abuhalaweh, *Hashemite University, Jordan*

Online Presentations

17:20 - 18:00	**Obligate role for Rock1 and Rock2 in adult stem cell viability and function** Rajita Pappu, *Genentech Inc., USA*

18:00 - 18:20	**Skeletal muscle cells differentiated from urine-derived stem cells as a functional tool to investigate new players in muscle contraction/relaxation** **Maria Talmon,** *University of Piemonte Orientale, Italy*
18:20 - 18:40	**Leveraging stem cells in disease modelling, drug discovery and therapeutic development** **Thamil Selvee Ramasamy,** *Universiti Malaya, Malaysia*
18:40 - 19:00	**A Phase II Randomized, Double-Blind, Placebo-Controlled Trial on the Use of Allogeneic Adipose-Derived Mesenchymal Stem Cells for Treating Lateral Epicondylosis** **Wonbin Kim,** *Seoul National University Hospital, South Korea*
19:00 - 19:20	**Role of nanoparticulated delivery of Mesenchymal stem cells in sexual function of adult Rabbit and Adult dog : a DMED knock out experiment model in Erectile Dysfunction** **Sabin Sathyananadan,** *TATA Memorial Centre, India*
19:20 - 19:40	**Single-cell transcriptomic atlas identifies cell types associated with vascular remodeling after small- diameter artificial vascular grafts implantation** **Yongchun Cui,** *Fuwai Hospital, China*
19:40 - 20:00	**Surface decontamination effectiveness at the "Université des Montagnes" Teaching Hospital: Monitoring in the biomedical analysis laboratory** **O'Neal Youté,** *University Military Health Research Center, Cameroon*

Day 3 Closing and Award Ceremony

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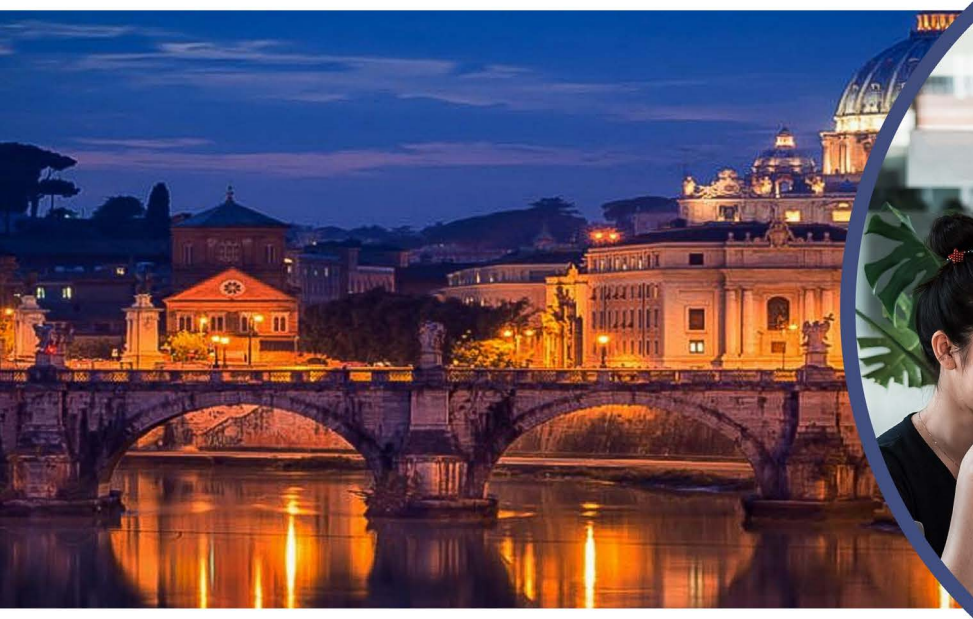
Keynote Speakers
Day 1



November 18-20, 2024 | Rome, Italy

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Maha Alattar
Virginia Commonwealth University, USA

Sleep Medicine in the Age of Artifical Intelligence

Sleep disorders are prevalent in the general population. Obstructive sleep apnea, Insomnia, Narcolepsy, and Legs Syndrome are example of common sleep disorders encountered in clinical practice. C urrent diagnostic approach, which relies heavily on overnight polysomnograms (sleep studies), is costly and time-consuming. Artificial intelligence (AI) has emerged as a promising tool to identify complex patterns in sleep and non-sleep diagnostic tools through predictive machine learning(ML) models. These patterns may be missed by humans and traditional statistical methods. Cardiac electrocardiograms is an example of non-sleep tool that can be used at the office to identify patients at risk for sleep apnea. AI can also reduce the workload of labor-intensive tasks such as scoring sleep studies, allowing healthcare professionals to focus more on direct patient care. AI can improve precision medicine. AI-based CPAP mask fitting using face scanning technology is example of personalized medicine.

Bioengineers and clinicians are particularly interested in automated processing of vast amounts of electrophysiologic data from sleep studies. ML models use algorithms to identify patterns in sleep-related data, aiding in more precise classification of sleep disorders. Narcolepsy for example is a challenging sleep disorder to diagnose and treat. AI can identify algorithms for precision-based and personalized diagnosis and management. The availability of public sleep datasets, comprising thousands of recordings from sleep labs and research studies, has facilitated the development of ML models by providing ample data for training. Integrating AI into sleep medicine has the potential to improve diagnostic and treatment accuracyof sleep disorders.

Biography

Dr Maha Alattar has completed her Doctor of Medicine (MD) training from University of Tennessee, College of Medicine in 1997. She completed her neurology residency training at Goergetown Univeristy Medical Center in 1998. She then completed fellowship training in Neurophysiology and Sleep Medicine from the Cleveland Clinic Foundation in 2002. She is currently in a Master's Program in Clinical and Translational Sciences with anticipated completion in 2025. Dr Alattar currently serves as an associate professor of neurology at Virginia Commonwealth University (VCU). She is the interim medical director of VCU center for sleep medicine. She is also part of the stroke/cerebrovascular department and is a stroke specialist. She has published articles on sleep disorders in patients with strokes as well as sleep in primary care and gastroesophageal disease. She has also written book chapters in sleep medicine textbooks.

Nathan Katz
Jointechlabs inc. USA

Orthobiologics for musculoskeletal disorders: active agents, mechanisms of action and dosing as key parameters towards clinical protocols.

Osteoarthritis (OA) is the fourth leading cause of disability worldwide. 80% of patients over the age of 65 have radiological evidence of OA. Current conservative management strategies are aimed at symptom control and do not modify the progression of OA. Non-pharmacologic and pharmacologic treatments have been used for early and moderately severe knee OA, but articular cartilage protection has not been convincingly shown. Surgical intervention is often undertaken when symptoms cannot be controlled and the disease progresses. Arthroscopic lavage and/or debridement are of transient, if any benefit.

The challenge for researchers to develop disease-modifying OA treatments is, therefore, of paramount importance.

Three main orthobiologic pillars are considered and received relative clinical acknowledgement: PRP, Bone Marrow Aspirate and Adipose tissue. Each of these was proposed in multiple variations, modifications and methods of preparation. The real word data as well as randomized controlled trials present evidence of clinical efficacy. However, the clinical protocols of applications are severely lacking clarity.

Understanding of differences in active agents, mechanisms of actions, dose dependency and, all together, the methods of preparation and delivery are the core for decision-making process and development of treatment modalities.

Key words: regenerative medicine, stem cells, orthobiologics, arthritis, musculoskeletal disorders.

Biography

Nathan Katz, PhD, co-founder, CEO, and Chief Scientist at Jointechlabs Inc., is an industry leader in the regenerative medicine and development of point of care autologous therapies.Dr. Nathan Katz is an inventor and entrepreneur. He owns multiple patents and key peer-reviewed publications, which serve as a basis for generational development of technologies in the field of clinical reproduction and translational regenerative medicine.He founded and led Jointechlabs to successful FDA clearance and commercialization of a breakthrough medical device/platform, empowering translational regenerative medicine..

Elizabeth Wright-Jin
Thomas Jefferson University, USA

NF-kB as a central regulator of inflammation after brain injury

Central nervous system injury is a major cause of motor and cognitive disability. Neuroinflammation is a common factor in the pathogenesis of brain injury and influences functional outcomes after injury. NF-kB is a central regulator of the immune response to injury in the central nervous system. Interestingly, NF-kB signaling can mediate both cell death and cell survival, depending on the cell type and duration of exposure. Microglia are the intrinsic immune cell of the central nervous system and, as such, are typically regulated by NF- kB signaling in the setting of inflammation. The impact of NF-kB signaling within CNS disease may reveal opportunities for targeted therapies. In one such brain injury, neonatal hypoxic ischemic encephalopathy (HIE), targeted therapies to regulate inflammation may impact the extent of damage during the primary phase of injury (0-6 hours after birth), but not the secondary phase of injury (6-120 hours after birth). Evidence supporting modulation of NF-kB signaling in animal models of HIE will be reviewed and the impacts and timing of NF-kB signaling in a novel mouse model of neonatal HIE will be presented. Ultimately, modulation of inflammation in neonatal HIE and other CNS disorders is a targetable pathway for novel therapies that may significantly impact long-term functional outcomes.

Biography

Dr. Elizabeth Wright-Jin, MD, PhD is a Pediatric Neurologist at Nemours Children's Health – Delaware. She completed her MD and PhD in Developmental Biology at Washington University School of Medicine in 2015. She completed her Pediatric Neurology residency at St. Louis Children's Hospital in 2020. Dr. Wright-Jin is an Assistant Professor of Pediatrics and Neurology at Sidney Kimmel Medical College at Thomas Jefferson University. She is also an affiliated Assistant Professor in the Department of Psychological and Brain Sciences at the University of Delaware. Dr. Wright-Jin runs a basic science research lab focusing on the neuroimmune mechanisms underlying neonatal brain injury.

Dhruv R. Seshadri
Lehigh University, USA

Wearable Technology and Bioelectronic Epidermal Devices for Guiding Human Health and Performance

The integration of wearable technology and edge computing offers a transformative approach to manage the health and performance of individuals. The translation of wearable technology from commodity devices for weekend warriors to now companion digital therapeutics has heightened the utility and application across the technology readiness scale. Despite the increased adoption of wearable sensors, there remains a critical need to validate these technologies in large scale studies across diverse populations to assess their efficacy prior to their application for clinical decision-making purposes. In part one of this talk, the speaker will discuss on-going efforts to validate wearable technology for human performance applications and will summarize a technology validation framework utilized to assess the efficacy of such devices.

In part two of this talk, the speaker will focus on the development of machine learning models to forecast biomechanical and physiological metrics relevant to human performance using commercial off the shelf technology (COTS) devices. In the context of collegiate athletics, there lies significant disparities within each of the three divisions and within each division as well. This financial inequity is compounded between male and female sports, with male sports receiving considerable funding compared to the female cohorts. The speaker will highlight the use of wearable technology in collegiate athletics at Lehigh University in male and female sports including football and soccer. We discuss the integration of machine learning to translate data acquired from wearable technology from a reactive to proactive means for performance optimization and rehabilitation applications.

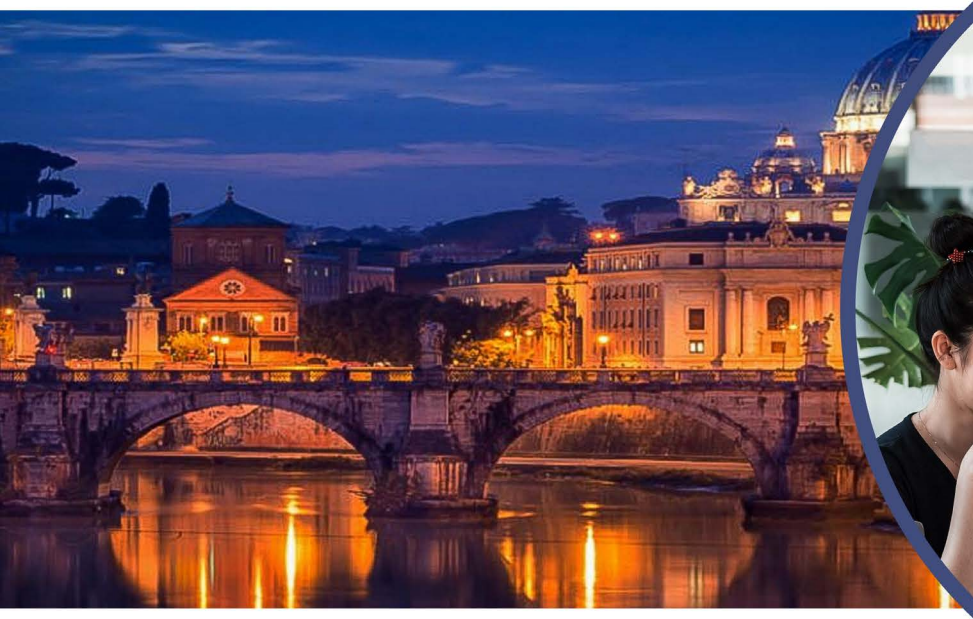
In part three of this talk, the speaker will describe foundational concepts in materials science, device physics and assembly processes for epidermal electronics, in 1D, 2D and 3D architectures. These set of devices introduce a soft, skin-mountable class of sensor system for this purpose with an emphasis on bio-inspired and bio-integrated technologies. The speaker will focus on the development of flexible epidermal electronic system for disease monitoring ranging from wound healing to neonatal vitals monitoring and to dysphagia. A key takeaway from this talk is the unique interdisciplinary and collaborative nature of the research between engineering and medicine to translate technologies to improve outcomes in the human performance domain.

Biography

Dhruv Seshadri joined the Department of Bioengineering in August 2023 as an assistant professor. He received his B.S. in polymers science and engineering in 2014, M.S. and PhD degrees in biomedical engineering in 2018 and 2022 respectively from Case Western Reserve University in Cleveland, Ohio. His research involves the development, validation, and translation of wearable technology, bioelectronic devices, and digital therapeutics targeting human health and performance. This research has been reported in news outlets such as CNN, Wall Street Journal, Forbes, Fortune, Wired UK, and Nature Outlook. His research has been funded by grants

from the Department of Defense, Lehigh University, National Science Foundation, and American Orthopedic Society for Sports Medicine for developing, translating, and commercializing wearable technology. The current research of his group focuses on synthesizing soft materials for conformable electronics, fabricating microelectromechanical systems and electroceutical platforms, and performing pre-clinical or clinical studies to validate their effectiveness all with an emphasis on bio-inspired and bio-integrated technologies in areas such as but not limited to orthopedics, sports medicine, human performance, cardiology, wound healing, and neuromuscular disease. These efforts are all highly multidisciplinary spanning expertise and collaborations in engineering and medicine.

Speakers
Day 1



November 18-20, 2024 | Rome, Italy

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Sayaka Akieda-Asai
University of Miyazaki, Japan

Mechanism of muscle atrophy in a normal-weight rat model of type 2 diabetes established by using a soft-pellet diet

Obesity-associated insulin resistance is a major risk factor for type 2 diabetes. However, in East Asia, the prevalence of type 2 diabetes is high, even with normal body mass index. In addition to high visceral adiposity, Asian patients with type 2 diabetes have increased accumulation of ectopic fat (e.g., in liver, skeletal muscle).

Dietary factors such as food texture affect feeding behavior and s metabolism, potentially causing obesity and type 2 diabetes. Recently, we investigated the effect of food texture on energy metabolism in rats by using standard pelleted chow (control pellets [CPs]) or the same pellets to which we added water (soft pellets [SPs]). Despite the similarities in caloric intake and body weight between the two groups, the rats fed SPs on a 3-h time-restricted feeding schedule for 14 weeks showed glucose intolerance, insulin resistance with disruption of hepatic insulin signaling, and hyperplasia of pancreatic □-cells. We also investigated the mechanism of muscle atrophy in rats that had been fed SPs for 24 weeks. The skeletal muscles of SP rats were histologically atrophic and demonstrated disrupted insulin signaling. Furthermore, we learned that the muscle atrophy of the SP rats developed via the IL-6–STAT3–SOCS3 and ubiquitin–proteasome pathways. These findings suggest that the phenotype of the SP group may be similar to that of East Asian type 2 diabetes. Futhermore, our data show that the dietary habit of consuming soft foods can lead to not only glucose intolerance or insulin resistance but also muscle atrophy.

Biography

Sayaka Akieda-Asai is an associate professor at the Department of Functional Analysis for Bioactive Peptides, Frontier Science Reserch Center, University of Miyazaki, Japan. She is a councilor of the Japan Endocrine Society and the Japan Society for the Study of Obesity. Her research focuses on the regulation of energy homeostasis and feeding behavior via bioactive peptides in mammals. This includes the regulation of neural circuits, peripheral and central cross-talk mechanisms, or cell-to-cell communication. These studies can be applied to the development of new treatments for obesity and diabetes.

Tanmoy Bera
Jadavpur University, India

Shellac and locust bean gum coacervated curcumin, epigallocatechin gallate nanoparticle ameliorates diabetic nephropathy in a streptozotocin-induced mouse model

Diabetic nephropathy (DN) presents a significant challenge in diabetes management, necessitating the development of more effective and safer therapeutic strategies. Our research focuses on using shellac and locust bean gum (LBG) coacervated nanoparticles to deliver curcumin (CUR) and epigallocatechin gallate (EGCG), with known therapeutic properties, to address the limitations of existing treatments.

Traditional treatments for diabetes often come with significant side effects when used in the long term. Bioactive compounds like CUR and EGCG offer promising alternatives due to their natural origin and potential to minimize side effects. However, their poor absorption and low bioavailability limit their effectiveness. Our research addresses this critical issue by developing a novel nanoformulation using shellac and locust bean gum to coacervate CUR and EGCG, leading to the enhancement of their bioavailability and therapeutic efficacy.

We formulated colloidal complex coacervate nanoparticles of CUR and EGCG using the anti-solvent precipitation method and characterized them using various techniques. For in vivo studies, diabetes was induced in mice via a single i.p. injection of streptozotocin dissolved in freshly prepared citrate buffer (4.5 pH), which were then treated with standard drug, free drug combination, and single and combined nanoparticles for 60 days, followed by histopathological analysis. The nanoparticles successfully entrapped individual compounds inside a complex matrix, as revealed by morphological investigations. Analysis showed that CUR and EGCG were amorphous due to their bond interactions with the matrix. Streptozotocin-treated mice, upon treatment with nanoparticles, showed mitigation of pancreatic β-cells and kidney podocyte injury with normalized kidney hypertrophy index, histopathology, and biochemical parameters, increased beta cell count, and a 38.68-fold higher blood glucose level inhibition were observed when compared to the free drug combination.

These findings have significant implications for diabetes management, offering a novel approach for enhancing the bioavailability and therapeutic efficacy of bioactive compounds. Successful bench scale formulation of these nanoparticles addresses a critical limitation in current diabetes treatments, potentially leading to safer and more effective therapeutic interventions for diabetic nephropathy and other diabetes-related complications. Overall, this research represents a significant advancement in diabetes and nephritis care and holds promise for improving the quality of life for patients suffering from this debilitating condition.

Biography

Tanmoy Bera, born in Kolkata, West Bengal, India, completed his M. Pharm and PhD in Pharmaceutical sciences in 1981 and 1987, respectively from Jadavpur University. With 30 years of experience in teaching and research and one year in industry, Dr. Bera has a distinguished career in academia. He began his service as a Senior Lecturer at Pune University, India, from 1986 to 1992, then served as a Reader at Jadavpur University, India, from 1992 to 2006. In 2005, he was a Visiting Professor in the Department of Biotechnology at Trinity College, The University of Dublin, Ireland. Since 2006, Dr. Bera has been a Professor at Jadavpur University, India.

Jariya Umka Welbat
Khon Kaen University, Thailand

Supplementation of hesperidin improves valproic acid-induced decreases in hippocampal neurogenesis linked to changes of neural stem cells and memory in rats

Neural stem cells in the subgranular zone of the hippocampal dentate gyrus are necessary for memory formation. Valproic acid (VPA), a histone deacetylase inhibitor, can interfere with the rate of hippocampal neurogenesis related to neural stem cell generation. Hesperidin (Hsd) extracted from citrus fruits is a bioflavonoid that has antioxidant properties and neuroprotective effects associated with increases in hippocampal neurogenesis. This work aims to investigate the effect of supplementation of Hsd on VPA-induced alteration of neural stem cells and hippocampal neurogenesis correlated with memory. Male Sprague-Dawley rats used in this study were divided into vehicle, VPA, Hsd, and VPA+Hsd groups. VPA (300 mg/kg) was administered by intraperitoneal injection twice daily for 14 days and Hsd (100 mg/kg) was given by oral gavage once a day for 21 days. After treatment, hippocampal neural stem cells in the subgranular zone were determined using immunofluorescence staining to observe sex-determining region Y-box 2 (Sox2), nestin, and Ki-67/RECA1. Hippocampal neurogenesis related to memory was determined using Western blotting by measuring doublecortin (DCX), brain-derived neurotrophic factor (BDNF), and postsynaptic density protein 95 (PSD95) protein expression. The results showed increases in neural stem cell numbers indicated by Sox2, nestin, and Ki-67/RECA1 positive cells in the VPA+Hsd group compared to the VPA group as well as upregulated BDNF, DCX, and PSD95 protein expression in the hippocampus. These findings suggest that supplementation of Hsd improves VPA-induced decreases in hippocampal neurogenesis correlated with changes of neural stem cells and memory in rats.

Biography

Professor Dr Jariya Umka Welbat completed her PhD in Biomedical Sciences (Neuroscience) in 2010 at the University of Nottingham. She is the chair of the Department of Anatomy and Assistant Dean of Research Affair and Innovation. Her research of interests focuses on the investigation of neuroprotective effects of bioactive compounds on neural stem cells and neurogenesis related to memory in animal models. She has published more than 45 papers in reputed journals.

Fenglian Luo
Chongqing Medical University, China

Efficacy of nebulized GM-CSF inhalation in preventing oral mucositis in patients undergoing hematopoietic stem cell transplantation: A retrospective study

This study collected data from patients who underwent hematopoietic stem cell transplantation from June 2021 to June 2023 and received GM-CSF for the prevention or treatment of oral mucositis. Based on GM-CSF utilization, these enrolled patients were divided into an observation group and a control group. The WHO Mucositis Scale Assessment Criteria were used to evaluate oral mucositis characteristics from pre-treatment until discharge. General patient data, pre-conditioning, transplantation methods, overall grade and duration of oral mucositis, pain scores, nutritional scores, days of parenteral nutrition use, oral mucosal infection, antibiotic use intensity, granulocyte and megakaryocyte reconstruction times, and adverse reaction reports were collected and summarized through the medical record system. Whether in autologous or allogeneic transplantation patients, GM-CSF atomized inhalation improved the prevention and treatment of oral mucositis, reduced oral infection incidence, decreased antibiotic use intensity, and shortened parenteral nutrition use days, thus promoting hematopoietic reconstruction.

Biography

Fenglian Luo, associate chief nurse, graduated from Chongqing Medical University. She has been engaged in clinical nursing and nursing education for over 30 years, specializing in hematology nursing and stem cell transplantation nursing. She has published more than 20 research papers in nursing education and clinical nursing practice in reputed journals. Her profound professional knowledge and rich experience have earned her wide recognition and respect in the nursing community.

Zhibing Zhang
Wayne State University, USA

Two directional trafficking of the IFT25 protein in the developing mouse sperm flagella

Intraflagellar transport 25 (IFT25), a component of IFT-B complex, is essential for sperm formation. However, intracellular localization of IFT25 in male testis is not known given no reliable antibodies are available for histologic studies, and the dynamic trafficking in the developing sperm flagella is not clear. To examine its localization and further investigate the mechanism in sperm formation, particularly to look into the dynamic trafficking of the protein, we generated a IFT25-GFP knock-in (KI) mice model using the CRISPR/cas9 system, with the mice IFT25 protein fused with a GFP tag in C-terminus. Three independent lines were analyzed. Western blotting using both anti-IFT25 and anti-GFP antibodies showed that the IFT25-GFP fusion protein was highly abundant only in the testis, which is consistent with the endogenous IFT25 protein. Examination of localization of the IFT25-GFP in isolated germ cells revealed that the fusion protein was present in the cytoplasm of spermatocytes and round spermatids and a strong signal was present in the developing sperm flagellar. The homozygous KI mice had normal spermatogenesis, fertility and sperm parameters. Diffusion analysis of IFT25 within the developing flagellar revealed the presence of both mobile and immobile fractions as revealed by fluorescence recovery after photobleaching (FRAP). Kymograph analyses demonstrate transport of IFT25-GFP within the developing tail both towards and away with a mean speed of 0.18 ± 0.11 μm/s. Our studies demonstrate that mice IFT25 travels along the developing sperm flagella in two directions that is essential for functional sperm formation.

Biography

Zhibing Zhang has completed his PhD at the age of 30 years from Tongji Medical University and postdoctoral studies from University of Pennsylvania School of Medicine. He is the director of male reproduction lab of Wayne State University. He has published more than 100 papers in reputed journals and has been serving as an editorial board member of repute.

Wei Li
Wayne State University, USA

Two mouse Spag6 genes coordinate to control sperm formation and male fertility

Sperm-associated antigen 6 (SPAG6) is the mammalian orthologue of Chlamydomonas PF16, a protein localizing within the central pair of the axoneme and involved in flagellar motility of the algae. In mice, two Spag6 genes have been identified. The ancestral gene, located on mouse chromosome 2, is named Spag6. A related gene, located on mouse chromosome 16 and evolved from the ancient Spag6 gene, has been named Spag6-like (Spag6l). Global Spag6 knockout mice (C57 background) are grossly normal, and fertility was not shown to be affected in both males and females. In particular, the homozygous males had normal sperm parameters, including sperm count, motility, and morphology. Examination of testis histology also revealed normal spermatogenesis. In contrast, the global Spag6l knockout mouse model (C57 background) was previously generated and showed lethality. Most homozygous Spag6l knockout mice died before 4-weeks of age; the few males which survived to sexual maturity were infertile, and the fertility of the females was also affected. However, fertility of the heterozygous Spag6l knockout mice was normal. We have crossed the two knockout lines to generate Spag6/Spag6l double knockout mice. The compound heterozygous (Spag6+/-; Spag6l+/-) mice showed normal fertility, and all the mice carrying Spag6l homozygous mutation (Spag6l-/-), either with heterozygous (Spag6+/-) or homozygous (Spag6-/-) Spag6 mutation died before 4-weeks of age. However, even though all Spag6-/-; Spag6l+/- mice were grossly normal, all the males were completely infertile. Compared to the controls (Spag6-/-; Spag6l+/+ or Spag6+/-; Spag6l+/-) males, the Spag6-/-; Spag6l+/- males had significantly reduced sperm number, and the sperm that were formed were morphologically abnormal and motility was significantly reduced. Histologic examination of the testes by light microscopy also revealed impaired spermiogenesis. Analysis by Transmission Electron Microscopy revealed abnormal sperm ultrastructure with both head/chromatin and tail formation defects. The Spag6-/-; Spag6l+/- females sired normal number of pups compared to the control females but the time from breeding to delivery was longer than normal, suggesting gestation defects. Overall, our findings indicate that in mouse, both genes, Spag6 and Spag6l, coordinate to modulate sperm formation and male fertility and are also likely required for proper female fertility.

Biography

Wei Li has completed her MD at the age of 23 years from Tongji Medical University and postdoctoral studies from University of Pennsylvania School of Medicine. She is the senior scientist of Wayne State University. She has published more than 40 papers in reputed journals and has been serving as an editorial board member of repute.

Navneet Boddu
Advanced Pain and Regenerative Specialists, USA

Human umbilical cord-derived mesenchymal stem cells in combination with small extracellular vesicles improve survival and dramatically reduce fibrosis and cirrhosis in Wistar rats receiving CCL4

Umbilical cord-derived mesenchymal stem cells (UC-MSCs) exert potential anti-inflammatory properties and in previous studies have shown anti-fibrotic effects in animal models of liver fibrosis and cirrhosis. In this proof-of-concept, first in animal study, we examined the effect of human UC-MSCs combined with small extracellular vesicles (SEVs) on liver fibrosis in a rat model of fibrosis and cirrhosis.

Human UC-MSCs were cultured via a xenofree, explant process with modifications to passage 3 and SEVs were obtained from supernatant of the cultured UC-MSCs. Two groups, each of 14 Wistar male rats, aged 7-8 weeks, received oral CCL4 with olive oil (1ml/kg) twice weekly for a total of 6 weeks from week 1 to week 6. Starting at week 4, after all animals in both groups received 6 induction doses of CCL4, one group of 14 animals received three weekly IV doses of UC-MSC + SEV at a dose of 1 million MSCs and 5 billion SEV each. All animals alive at week 7 were sacrificed. 14 animals who received CCL4 alone from weeks 4-7 were control animals. The primary objectives were to examine the survival differences between two groups of animals and the effect of UC-MSC + SEV on fibrosis stage by Trichrome and Sirius Red.

Six animals in the control group died before week 6 whereas all 14 animals in the US-MSC + SEV were alive at week 6. The survival difference at 6 weeks was significant between two groups (100% with UC-MSC + SEV vs 57%, p=0.0066). The necropsy of 6 dead animals in the control group showed cirrhosis in all 6 animals. The comparison between 8 animals in the control group and 14 animals receiving US-MSC + SEV is shown in Table1. Notably, liver fibrosis stage by both Trichrome and Sirius Red was significantly lower in the UC-MSC + SEV group. While there were no animals in the UC-MSC + SEV group had cirrhosis, there were 12 animals in the control group with cirrhosis. There were corresponding favorable liver biochemistry and liver immunohistochemistry changes in the UC-MSC +SEV group (Table).

Human UC-MSCs cultured to passage 3 in combination with SEV significantly improved the survival of the animals receiving low-dose CCL4. UC-MSC + SEV dramatically reduced the development of fibrosis and cirrhosis induced by CCL4. Further studies are needed to validate our observations and to test the combination of UC-MSC + SEV in other animal models and in humans with fibrotic liver diseases and liver failure

Biography

Navneet Boddu, MD, is a specialist in pain and regenerative medicine with over 25 years of experience in interventional pain management. He utilizes advanced technologies such as platelet-rich plasma (PRP), autologous stem cells, and other biologics to promote the body's natural healing processes for joints, tendons, ligaments, and spine disorders. Dr. Boddu has published numerous journal articles on pain management and stem cell therapies and has co-authored several chapters on nerve block procedures and regenerative medicine techniques in orthopedic atlases and textbooks.

Jacques de Gerlache
French Association of Systems Science, France

Lessons from global alterations observed in both the genetic and epigenetic components of multicellular organisms during the multistep processes of carcinogenesis.

From a thermodynamic point of view, it appears that a biological cell must be considered as a global organisation of which certain emergent properties do not appear when analyzing only some of its parts, like the genome. The study of cellular instability has revealed the complexity of clonal evolution, combining chaotic and continuously evolving genomes. In such trans-catalytic loop, there is no absolute hierarchy between the genotypes and the phenotypes since they are in fact 'co-organizers of each other'. In this context, it appears that single genetic events alone are not sufficient to induce cancer as epigenetic changes modulate cancer induction and progression. The latter are considered to be a mix of stochastic and deterministic events. Combined effects of genetic and epigenetic changes allow indeed the processes by which some cells in an organism recover their « autonomy » and develop tumors, just like « ghettos » appear in some cities, this not necessarily always through identical causes and processes. In this context, some aspects of fundamental biological processes such as those observed in the so-called epi-genetic multi-step processes of carcinogenesis in the broad sense, could enlight and generate ideas and perspectives in the stem cell research area. These observations of symbiotic resonance among such genetic and epigenetic processes could indeed suggest that, in multicellular organisms, some fundamental processes actually modulate and control embryogenesis and cell differentiation through a kind of « epigenetic code » in resonance with the genetic one.

Biography

Jacques holds a PhD in pharmaceutical sciences and published articles in the field of the muliphasic process of chemical carcinogenesis, including its thesis on "A systemic analysis of carcinogenesis processes" and, recently, co-signed an article on Tetraploidy and malignant cell transformation within a systemic approach . Active member of several working groups in the field of systemic dynamics of complex systems and organizations, he also published an article (in French) on Couplings of symbiotic resonance and hetero-organization as founding principles of complex systems, between dissipative efficiency and resilience.,

Yasuhiro Seta
Hitonowa Medical Clinic, JAPAN

Safety and Preliminary Efficacy of SHED-CM in the Treatment of Amyotrophic Lateral Sclerosis (ALS)

Amyotrophic lateral sclerosis (ALS) is a progressive, incurable disease characterized by the selective degeneration and loss of both upper and lower motor neurons. Currently, effective treatments are limited, highlighting the urgent need for new therapeutic approaches. Advances in regenerative medicine have opened up new possibilities, including the use of Stem Cells from Human Exfoliated Deciduous Teeth (SHED), which are known for their neuroprotective and immunomodulatory properties. Conditioned medium from SHED (SHED-CM) contains a range of bioactive factors, including neurotrophic factors, that may slow the progression of ALS.

This presentation will cover the findings of a retrospective cohort study conducted to assess the safety and preliminary efficacy of SHED-CM in ALS patients. A total of 24 patients (mean age: 55.2 years) received SHED-CM therapy, and safety was evaluated by monitoring adverse events, vital signs, and laboratory results. Efficacy was measured through changes in ALS Functional Rating Scale-Revised (ALSFRS-R) scores.

Our results show that SHED-CM treatment was well-tolerated, with adverse events observed in only 3% of patients, none of which were serious. Importantly, patients in this cohort showed a slower decline in ALSFRS-R scores compared to typical ALS progression, suggesting a potential delay in disease progression. Some patients either maintained their scores or showed improvements in muscle strength, providing early indications of efficacy.

While these results are promising, it is important to note that they are preliminary. Further research, including larger, controlled clinical trials, is needed to fully validate the efficacy of SHED-CM and explore its mechanisms of action. This study represents a potential new avenue for ALS treatment, offering hope to patients who currently have limited options.

Biography

Yasuhiro Seta is a regenerative medicine physician based in Japan. He is the director of the Hitonowa Medical Clinic, where he is conducting pioneering research on the analysis and application of SHED-CM (Stem Cells from Human Exfoliated Deciduous Teeth-Conditioned Medium). Dr. Seta's work focuses on exploring the potential of regenerative therapies, particularly in the treatment of amyotrophic lateral sclerosis (ALS) and stroke. His dedication to advancing regenerative medicine aims to bring new hope to patients suffering from these intractable diseases.

Navneet Boddu
Advanced Pain and Regenerative Specialists, USA

Role of Mesenchymal Stem Cells in Treatment of Systemic illness

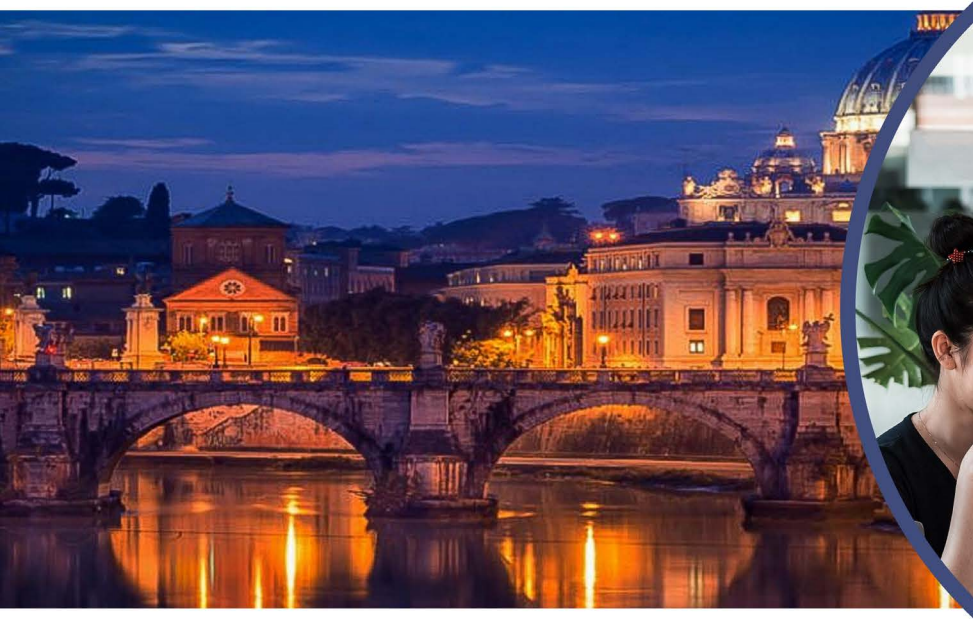
Chronic systemic organ failure is an important clinical problem with signifcant morbidity, mortality and socioeconomic impact worldwide. Unfortunately, there is no defnitive or curative treatment for most of these conditions, and the management has been predominantly confned to supportive care, which necessitates the need for novel therapies. Mesenchymal stem cell (MSC) therapy has a vast array of preclinical data and early, preliminary clinical data that suggests its potential to regenerate and restore the function of damaged tissues and organs. To evaluate the effectiveness of MSC therapy in managing multiorgan failure, utilizing currently available literature. A review of human randomized controlled trials (RCTs) and observational studies assessing the role of MSC therapy in managing or treating organ failure. PubMed, Cochrane Library, US National Guideline Clearinghouse, Google Scholar, and prior systematic reviews and reference lists were utilized in the literature search from 1990 through May 2020. In this lecture, studies that included embryonic stem cells, induced pluripotent stem cells, differentiated MSCs into specifc lineage cells, and hematopoietic stem cells were excluded. Trials with intraorgan infltration of MSC were also excluded. The primary outcome evaluated the improvement in clinical assessment scores and indices of organ function. The secondary outcome assessed the safety of MSC therapy in the clinical trials. This lecture is based on randomized control trials of MSC in humans for lung, heart, liver, kidney, musculoskeletal and COVID-19. The studies specifcally assessed the effectiveness of MSC therapy in ARDS reported curative treatment, ischemic and nonischemic heart failure reported benefcial effects. Liver failure from different etiologies revealed favorable outcomes. Kidney failure showed positive results and Musculoskeletal disorders showed positive outcomes. The incidence of disease worsening or major complications was extremely rare from MSC therapy. There is a lot more animal data showing the safety and efcacy of MSC in organ failure.

MSC therapy seems to be promising to treat multiorgan failure. More studies are urgently needed to assess both safety and efcacy.

Biography

Navneet Boddu, MD, is a specialist in pain and regenerative medicine with over 25 years of experience in interventional pain management. He utilizes advanced technologies such as platelet-rich plasma (PRP), autologous stem cells, and other biologics to promote the body's natural healing processes for joints, tendons, ligaments, and spine disorders. Dr. Boddu has published numerous journal articles on pain management and stem cell therapies and has co-authored several chapters on nerve block procedures and regenerative medicine techniques in orthopedic atlases and textbooks.

Keynote Speakers
Day 2



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

Mitchell B. Sheinkop
Rush University, USA

Demonstration of Safety and Efficacy for Treating Knee Osteoarthritis with a Combined Intraosseous and Intraarticular Delivery of Authologous Bone Marrow Concentrate at Two-Year Follow-up

Osteoarthritis (OA) is a progressive disease that causes pain and disability in most joints of the body, but most frequently is found in the knee. Treatments range from palliative (e.g., NSAIDS) and percutaneous injections (e.g., corticosteroids) to surgical replacement. Orthobiologic treatments, like Platelet-rich Plasma (PRP) and Bone Marrow Concentrate (BMC), also have been used to treat knee OA. The current study was undertaken to assess the safety and efficacy of using BMC delivered via the intraarticular route as well as delivery into the intraosseous compartment of the tibial plateau to treat mild-moderate knee OA.

Patient-reported outcomes (PROs; VAS, LEFS, KOOS-Knee, KOOS-Function), and Range-of-Motion (ROM) were evaluated at baseline, 6 weeks, 13 weeks, 6 months, 1 year and 2 years. PROs on average showed statistically meaningful differences compared to baseline through the 1-year and 2-year milestones and some earlier milestones. ROM increased at all milestones and was statistically meaningfully increased compared to baseline at the 1-year and 2-year milestones. Eighteen of the original 22 knees survived to the 2-year milestone. Assessing changes in the KL scores at two-years compared to baseline showed five knees that worsened by one grade, three knees that improved by one grade and nine knees with no grade changes. No serious adverse events were observed during the treatment or follow-up. Thus, a combination of IO and IA delivery of autologous BMC demonstrated a durable therapeutic benefit in mitigating pain and improving quality of life for the study participants' knee OA out to 2-years.

Biography

Prior to retirement, Dr. Mitchell Sheinkop was a board-certified orthopedic surgeon specializing in joint replacement surgery for more that 35 years. He transitioned from performing surgery to providing orthobiologic treatments (PRP and BMC) for treating a wide variety of musculoskeletal pathologies, including OA, tendon and ligament strains and other pathologies benefiting from a non-surgical intervention. Dr. Sheinkop has continued his support of the use of orthobiologic treatments as a consultant and researcher.

Makoto Senoo
Boston University, Japan

Oncogenic Acceleration of Epithelia Driven by Alternative Splicing of the Stem Cell Factor p63

The transcription factor p63 belongs to the p53 tumor suppressor family. However, p63 primarily regulates the proliferative potential of stem cells in epithelia. While studies have shown that p63 can exhibit both tumor suppressive and oncogenic properties in vitro, studies using knockout and transgenic mouse models have not linked p63 to tumor suppression or oncogenesis in vivo. Despite the rarity of p63 mutations in cancer, our previous study has shown a strong association between the splicing out of exon 4 of the p63 gene and epithelial tumor formation. Specifically, the loss of exon 4 leads to the activation of progenitor cells in epithelia, contributing to their malignant transformation. In experiments with mice lacking exon 4 of the p63 gene, we found that heterozygous mutants developed normally but displayed increased hyperplasia in certain epithelial tissues when exposed to carcinogens or oncogenic stimuli. Additionally, clonogenic culture of epithelia, developed for the skin grafts, has shown that progenitor cells in mutant epithelia exhibited hyper-proliferation compared to those in wild type counterpart. Overall, these findings underscore the critical role of p63 in tumor suppression in vivo and emphasizes the importance of splicing rather than gene mutation in compromising epithelial progenitor cell activity, ultimately leading to the development of precancerous conditions and, potentially, aggressive cancers such as squamous cell carcinomas.

Biography

Dr. Makoto Senoo's professional experience in science spans more than 30 years in the fields of organic chemistry, biomedical engineering, molecular and cell biology, immunology, oncology, and stem cell biology. Dr. Senoo started his professional career in pharmaceutical companies in Sweden and Japan, and moved to academic institutions, including Harvard Medical School, University of Pennsylvania, and Boston University.

Currently, Dr. Senoo serves as Chief Scientist in FRACORA Co, Ltd., a leading cosmetic company in Japan, where he develops future products that are fueled by the natural healing power of stem cells.

Lev Fedorov
Oregon Health & Science University, USA

Successes and Failures of the Utilization of CRISPR/Cas9 Technology for Humans

CRISPR/Cas9 gene editing technology has a fascinating history of development. It gained significant attention from the scientific community after a landmark publication in Nature by Charpentier and Doudna in 2013. Since then, scientists working with a variety of organisms, including prokaryotes and eukaryotes, have actively utilized CRISPR/Cas9. This technology has been applied to numerous species, including insects, worms, vertebrates such as fish and mice, and even humans. The technology demonstrated a remarkable potential for genome modification, ultimately leading to Emmanuelle Charpentier and Jennifer Doudna being awarded the Nobel Prize in Chemistry in 2020 “For the development of a method for genome editing.”

Presently, CRISPR/Cas9 technology is the most powerful tool for genome editing in vitro and in vivo. Achievements in genome editing in mouse has led to significant advancements in understanding gene functions and disease mechanisms. We successfully created several mouse models with specific gene knockouts and knock-in to study diseases as neurological and metabolic disorders.

Moreover, the CRISPR/Cas9 combined with stem cell technology demonstrated great promise in regenerating human tissues. Correction of genetic defects in human hematopoietic stem cells

and other tissues, offering hope for treating a variety of degenerative diseases.

Despite the significant successes of CRISPR/Cas9, time has shown that it has some challenges and limitations. CRISPR/Cas9 can sometimes lead to abnormal changes of mouse and human genome such as deletion, insertion, off target effect and mosaicism,, etc. Such mutations can disrupt the function of other genes and lead to unpredictable outcomes.

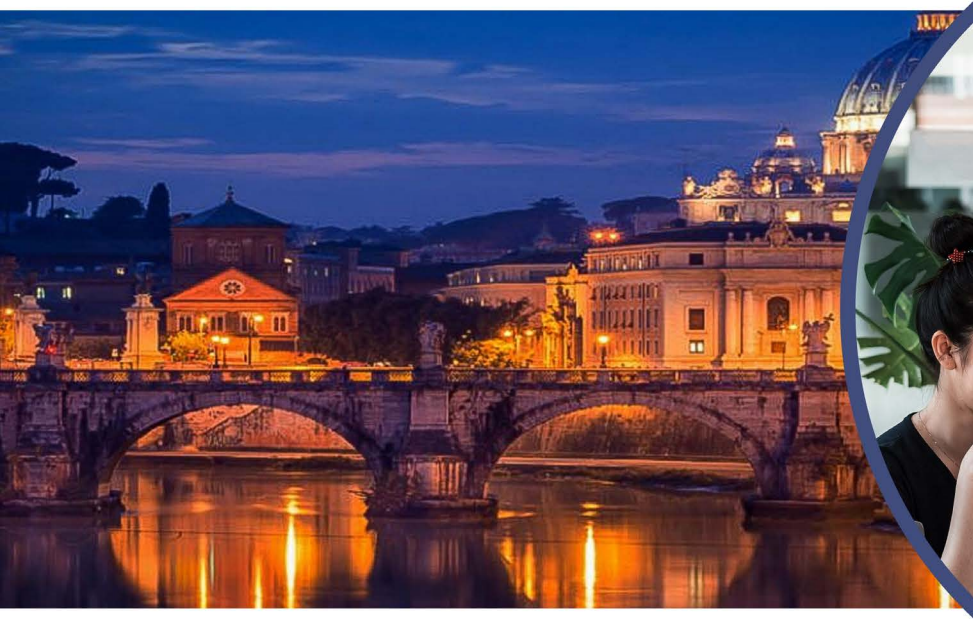
Moreover, attempts at gene editing in human germline cells (sperm, eggs, or embryos) will be shown. The attempts have sparked intense ethical debates in wide scientific community. Prohibition and regulation of such efforts are aimed at preventing potentially dangerous applications of CRISPR/Cas9 in human reproduction and genome stability.

Biography

Lev Fedorov graduated from Moscow State University and earned his PhD degree in genetics in 1987 at the Institute of General Genetics of the Russian Academy of Sciences in Moscow. Following this, he served as the Group Leader of the Mouse Dev. Genetics Group from 1986 to 1993 at the Med. Genetics Res. Center in Moscow. Later, he continued his scientific career in Germany, serving as a guest scientist at the Max-Planck-In-

stitute in Freiburg from 1993 to 1995. Subsequently, he worked as Group Leader of Mouse Genetics at the University of Wurzburg from 1995 to 2004. Later, he assumed the role of the Head of the Transgenic Core at the University of Jena from 2004 to 2008. After 15 years of work in Germany, Lev relocated to Portland, Oregon, USA. Since 2008, he has served as Res. Assist. Professor, and Director of the Transgenic Mouse Models Core Laboratory at Oregon Health & Science University. His scientific interests encompass several topics. His main current focus lies in Transgenic Technology and modeling of human hereditary diseases using modern techniques, notably CRISPR gene editing. Additionally, he explores the Spindle Assembly Checkpoint (SAC) and its potential involvement in recurrent pregnancy loss in humans. Moreover, he delves into oncogenes and the cellular molecular mechanisms that underlie both embryonic development and cancer progression.

Speakers
Day 2



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

M Julia Barbado
Rio Hortega University Hospital, Spain

Systemic Lupus Erythematosus: Mesenchymal Stem Cell Therapy, Anti-Inflammatory and Peripheral Tolerance Effects

Systemic lupus erythematosus (SLE) is a prevalent autoimmune disorder with a high mortality rate. It is characterized by the failure of self-tolerance and the activation of autoreactive lymphocytes, which lead to a persistent disease. Despite the efficacy of current treatments in achieving a certain level of patient improvement, some SLE patients are refractory to treatment and others relapse after drug withdrawal. The toxicity of common drug regimens, which involve recurrent infection and the continuous inflammation, contribute significantly to the progressive decline in organ function. Therefore, the clinical management of SLE requires more effective and less toxic treatments, ideally inducing complete remission and self-tolerance. In this context, recently developed cell therapies based on mesenchymal stem cells (MSCs) represent a promising and safe strategy in SLE.

In this context, mesenchymal stem cells (MSCs) have been shown to inhibit B cells activation, prevent T CD4+ cell differentiation into autoreactive T cells, reprogram macrophages with anti-inflammatory effects, and inhibit dendritic cells (DCs) limiting their antigen presentation cell activity.

Furthermore, MSCs may induce antigen-specific tolerance, which enables anergy processes in autoreactive cells. This is achieved by inhibiting the maturation of antigen-presenting DCs, blocking TcR signaling, and secreting inhibitory molecules. Additionally, apoptotic activity is increased to eliminate them, and regulatory T cells (Tregs) are activated to enhance their proliferation and the induction of tolerogenic DCs. Consequently, the induction of self-tolerance leads to the achievement of immune balance, maintaining inflammation under control and decreasing lupus flares.

Biography

Barbado holds a medical degree from the Autonomous University of Madrid, Spain, and completed her residency in internal medicine at the Clinic University Hospital in Valladolid, Spain. In 1998, she was awarded a PhD by the University of Valladolid.

She is the Director of the Autoimmune Diseases Unit at the Río Hortega University Hospital in Valladolid, where she also heads the Autoimmunity and Inflammation research team at the hospital's Research Unit. Additionally, she holds the position of Professor at the University of Valladolid, Spain. Barbado serves as the principal investigator for the Valladolid Node within the RICORS TERAV (Advanced Therapies) network at the Carlos III Health Institute in Spain. In the Cell Therapy Program, she has conducted a Phase I trial of mesenchymal stem cells (MSC) in lupus nephritis. She currently serves as the principal investigator of a clinical trial, registered on ClinicalTrials.gov as NCT03673748, entitled "Treatment of Lupus Nephritis with Allogeneic Mesenchymal Stem Cells (MSV-LE)". Moreover, the Cell Therapy Program research group has conducted a phase I/II trial, entitled "Treatment of Severe Coronavirus Pneumonia with Allogeneic Mesenchymal Stromal Cells (COVID_MSV)," which can be found at ClinicaTrial.gov with the ClinicalTrials.gov identifier: The trial is registered as NCT04361942. The study is led by Dr. D. Barbado, who serves as both the clinical lead and the study designer.

Navneet Boddu
Advanced Pain and Regenerative Specialists, USA

Use of Autologous Biologics for Treatments spine and joint disorders

Chronic musculoskeletal (MSK) pain is one of the most common medical complaints worldwide and musculoskeletal injuries have an enormous social and economical impact. Current pharmacological and surgical treatments aimed at relieving pain and restoring function are marginal. In addition, unsatisfactory outcomes and adverse effects are commonly reported. In order to fnd an accurate treatment to such pathologies, over the last years, there has been a signifcantly increasing interest in cellular therapies, such as Platelet Rich Plasma, Bone Marrow Mesenchymal Stem Cells and adipose-derived mesenchymal stem cells (AMSCs). These cells represent a relatively new strategy in regenerative medicine, with many potential applications, especially regarding MSK disorders, and have become one of the leading disease modifying options for musculoskeletal diseases. There are preclinical and clinical studies that demonstrate their safety efcacy in muscle, tendon, bone Spine and Joint regeneration.

This presentation aims to review the current state of autologous biologics therapies in the treatment of several MSK diseases and their clinical applications. Regenerative medicine interventions are applied to assist in the repair, and to potentially replace or restore damaged tissue through the use of autologous/allogeneic biologics and it continues to expand. The anti-infammatory, immunomodulatory, and regenerative properties of bone marrow aspirate concentrates (Bone Marrow Mesenchymal Stem Cells), Micro Fragmented Adipose tissue (Adipose MSC), and Platelet Rich Plasma have shown their therapeutic efcacy and safety in patients with severe chronic spine degeneration and joint disorders. Now, there are deeper investigations into the pathogenesis of the MSK diseases at the cellular level and the mechanisms of the biologics that could treat them.

There are several precision driven procedural techniques for delivery of the autologous biologics into the intervertebral disc of the spine or Subchondral bone of the joints or image guided intra-articular injection for better efcacy of biologics giving the patients' better outcomes. Randomized control trials and metaanalysis studies have very good outcomes making biologics a viable option for nonsurgical treatments of spine and joint diseases..

Biography

Navneet Boddu, MD, is a specialist in pain and regenerative medicine with over 25 years of experience in interventional pain management. He utilizes advanced technologies such as platelet-rich plasma (PRP), autologous stem cells, and other biologics to promote the body's natural healing processes for joints, tendons, ligaments, and spine disorders. Dr. Boddu has published numerous journal articles on pain management and stem cell therapies and has co-authored several chapters on nerve block procedures and regenerative medicine techniques in orthopedic atlases and textbooks.

Giulia Gaggi
University G. D'Annunzio of Chieti-Pescara, Italy

Assessing the Impact of Bisphenols and Perfluoroalkyls on Human Pluripotent Stem Cells: Implications for Health, Development and Fertility

Bisphenols and Perfluoroalkyls are ubiquitous chemical compounds used in various industries, including plastic production and food packaging, posing a risk to human health as endocrine disruptors (EDs). These substances mimic natural hormones when consumed through contaminated food, potentially leading to various diseases. Of particular concern is their ability to traverse the placental barrier, accumulating in fetal serum, amniotic fluids, and placental tissues during pregnancy.

The study investigates the effects of Bisphenol-A (BPA), Bisphenol-S (BPS), perfluorooctane-sulfonate (PFOS), and perfluorooctanoic-acid (PFOA) on human-induced pluripotent stem cells (hiPSCs), which mirror characteristics of embryonic pluripotent stem cells. Findings reveal significant mitotoxicity and gene expression alterations related to pluripotency maintenance, germline specification, and epigenetic regulation in hiPSCs exposed to these EDs.

Moreover, combined exposure to these chemicals elicits additive, synergistic, or adverse effects, highlighting the intricate nature of prenatal ED exposure. This complexity may compromise stem cell integrity during embryonic development, affecting critical early human growth stages and potentially impacting future fertility.

The study emphasizes the importance of raising awareness about the multifaceted impact of EDs on human health and underscores the significant social and economic burdens associated with these compounds.

Biography

Giulia Gaggi obtained a Ph.D. in Translational Medicine at the University of G.D'Annunzio of Chieti-Pescara in 2021. She is currently Assistant Professor in Human Anatomy in the same university. In her research work she is also investigating the effects of environmental endocrine disruptors on human pluripotent stem cells and brain organoids, to dissect their effect on the development of the nervous system.

Andrea Di Credico
University G. D'Annunzio of Chieti-Pescara, Italy

Application of machine learning to high-content microscopy reveals phenotypic changes in human dopaminergic neurons exposed to endocrine disruptors

Parkinson's disease (PD) is the second most common neurodegenerative disorder, characterized by the degeneration of midbrain dopaminergic neurons (mDANs). Endocrine disruptors (EDs) are compounds that interfere with hormone signaling. Bisphenols (BPs) and perfluoroalkyl substances (PFs), two types of EDs, are released from plastics and household products, leading to unavoidable human exposure. Animal studies suggest that EDs exposure may contribute to PD-like symptoms, but data on the effects of BPs and PFs on human neural models are limited. Previous studies have demonstrated that machine learning (ML) can be applied to microscopy data to classify cellular phenotypes based on image features. This study aimed to assess the effects of BPs and PFs on the phenotypic profile of human stem cell-derived mDANs, using doses that mimic human exposure levels. Cells were exposed to EDs for 72 hours, labeled with neuronal markers, and analyzed using high-content microscopy. Three ML models were trained to distinguish between ED-treated and control mDANs, achieving a high classification accuracy (0.96). Phenotypic analysis showed a significant increase in alpha-synuclein and tyrosine hydroxylase levels in neurons exposed to EDs, along with a marked reduction in neurite length and branching. Our findings demonstrate that exposure to BPs and PFs adversely affects human mDANs, altering their phenotype in a way that mirrors PD. ML-driven high-content imaging is essential for detecting subtle phenotypic changes at the subcellular level, which may be overlooked by visual examination alone. These findings highlight the impact of EDs on mDANs and suggest new avenues for detailed pathological analysis.

Biography

Andrea Di Credico is a researcher at the Department of Medicine and Aging Sciences at the University "G. D'Annunzio" of Chieti-Pescara, Italy.

Joseph J.Tartaglia
University of Rome, School of Medicine, USA

Mobilization of Endogenous CD34+/CD133+ Endothelial Progenitor Cells by Enhanced External Counter Pulsation for Treatment of Refractory Angina

Adult stem cell therapy via intramyocardial injection of autologous CD34+ stem cells has been shown to improve exercise capacity and reduce angina frequency and mortality in patients with refractory angina (RA). However, the cost of such therapy is a limitation to its adoption in clinical practice. Our goal was to determine whether the less costly, less invasive, and widely accessible, FDA-approved alternative treatment for RA patients, known as enhanced external counter pulsation (EECP), mobilizes endogenous CD34+ stem cells and whether such mobilization is associated with the clinical benefits seen with intramyocardial injections. We monitored changes in circulating levels of CD34+/CD133+ and CD34+/KDR+ cells in RA patients undergoing EECP therapy and in a comparator cohort of RA patients undergoing an exercise regimen known as cardiac rehabilitation. Changes in exercise capacity in both cohorts were monitored by measuring treadmill times (TT), double product (DP) scores, and Canadian Cardiovascular Society (CCS) angina scores between pre- and post-treatment treadmill stress tests. Circulating levels of CD34+/CD133+ cells increased in patients undergoing EECP and were significant ($\beta = -2.38$, $p = 0.012$) predictors of improved exercise capacity in these patients. CD34+/CD133+ cells isolated from RA patients could differentiate into endothelial cells, and their numbers increased during EECP therapy. Our results support the hypothesis that mobilized CD34+/CD133+ cells repair vascular damage and increase collateral circulation in RA patients. They further support clinical interventions that can mobilize adult CD34+ stem cells as therapy for patients with RA and other vascular diseases.

Biography

Joseph Tartaglia completed his MD from the University of Rome, La Sapienza in 1984, his residency in Internal Medicine at Wakefield, Montefiore Einstein in 1988, and his Fellowship in Cardiovascular Disease at North Shore University Hospital, Weill Cornell Medicine in 1990. Boarded in Internal Medicine, Cardiovascular Disease, and Geriatric Medicine, he is an Assistant Prof. of Medicine at New York Medical College and an adjunct Prof. at Weill Cornell. The author of numerous papers in his field, he has been a pioneer of Enhanced External Counter Pulsation since 1995 when he served on the steering committee of the first international registry for Enhanced External Counter Pulsation. He has teaching positions at Westchester County Medical Center, Weill Cornell Medical College, Greenwich Hospital, a Yale, New Haven Health division.

Alberto Donzelli
Allineare Sanità e Salute,Italy

A Critical Analysis of All-Cause Deaths during COVID-19 Vaccination in an Italian Province

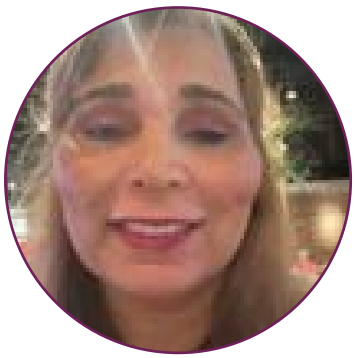
Immortal time bias (ITB) is common in cohort studies and biases the association estimates between the treated and untreated individuals. We used data from an Italian study on COVID-19 vaccine effectiveness, with a large cohort, long follow-up, and adjustment for confounding factors, but affected by ITB. We verified the real impact of the vaccination campaign, comparing the risk of all-cause death between the vaccinated and the unvaccinated

pulation. We aligned all subjects on a single index date and considered the "all-cause deaths" outcome to compare the survival distributions of the unvaccinated group versus various vaccination statuses. The all-cause-death hazard ratios (HRs) in univariate analysis for vaccinated people with 1, 2, and 3/4 doses versus unvaccinated people were 0.88, 1.23, and 1.21, respectively. The multivariate values were 2.40, 1.98, and 0.99. Possible explanations of this trend of the HRs as vaccinations increase could be: a harvesting effect; a calendar-time bias, accounting for seasonality and pandemic waves; a case-counting window bias; a healthy-vaccinee bias; or some combination of these factors. With 2 and even with 3/4 doses, the calculated Restricted Mean Survival Time and Restricted Mean Time Lost showed a small but significant downside for the vaccinated populations.

The study results should lead to rethink political choices about pandemic management, supporting greater caution in the future.

Biography

Alberto Donzelli, a physician specialized in Hygiene, Preventive Medicine, and Food Science, has over 41 years of dedicated public health experience. He has held key roles, including Health Officer, General Director, and former member of the Superior Council of Health. For over a decade, he led the Appropriateness Education and EBM Service at Milan's ASL and has authored numerous scientific publications. As founder and board member of the Allineare Sanità e Salute Foundation, he works to align healthcare practices with research-based solutions to reduce conflicts of interest in the healthcare sector.



Rosa Fireman Dutra
Federal University of Pernambuco, Brazil

Redox-probe free immunosensors towards point-of-care detections for clinical diagnostic

Point-of-care electrochemical immunosensors are promising strategies for next-generation diagnostics due to the cost-effective, practical usage and smart response. Although screen-printed immunosensors have undergone have undergone a major revolution after Covid19, the detection of antigens or antibodies with point-of-care devices is still a major challenge due to several limitations, including many steps required to reveal the reactions, non-practical response, time-consuming results and a low reproducibility, which are also due to the adsorption of the redox probe on the sensor surface. To overcome these challenges, some strategies have focused on removing the ferrocyanide by adsorbing the redox probe to the electrode surface or excluding it from the measurements to allow direct measurements. This study describes the use of ferrocene as mediator directly immobilized on the sensor surface by complexing it with graphene nanoplateles,/graphene The transport of the redox species from the electrode generates the amperometric signal, which is proportional to the lower diffusion of the species on the electrode surface that is hindered by the adsorbed insulating antigen or antibody. Electrochemistry of ferrocene and its derivatives is well known, being attractive due to its excellent stability, electrochemical reversibility by oxidation of iron II. This study describes an electrocatalytic graphene adsorbed on sensor surface as a proof-of-concept, confirming antigen detected by direct measurements without any additional redox probe for revealing the reactions.

Biography

Rosa Fireman Dutra is associate professor at the Federal University of Pernambuco (UFPE), Brazil. She is Leader of Biosensors and Bioengineering Research Group, Electronic Engineer and has gone her PhD in biosensors area (Brazil) with focus on point-of-care devices.

Dindial Ramotar
Hamad Bin Khalifa University, Qatar

Mft1, identified from a yeast genome-wide screen, mediates cell cycle arrest to counteract quinoxaline-induced toxicity

Quinoxaline is a heterocyclic compound with a two-membered ring structure that undergoes redox cycling to produce toxic free radicals. It has antiviral, antibacterial, antifungal, and antitumor activities. However, the biological functions that are involved in mounting a response against the toxic effects of quinoxaline have not been investigated. We performed a genome-wide screen using the yeast haploid mutant collection and reported the identification of 12 mutants that displayed varying sensitivity towards quinoxaline. The quinoxaline-sensitive mutants were deleted for genes that encode cell cycle function, as well as genes that belong to other physiological pathways such as the vacuolar detoxification process. Three of the highly sensitive gene-deletion mutants lack the DDC1, DUN1, and MFT1genes. While Ddc1 and Dun1 are known to perform roles in the cell cycle arrest pathway, the role of Mft1 remains unclear. We show that the mft1Δ mutant is as sensitive to quinoxaline as the ddc1Δ mutant. However, the double mutant ddc1Δ mft1Δ lacking the DDC1 and MFT1 genes, is extremely sensitive to quinoxaline. We further show that the mft1Δmutant is unable to arrest in the G2/M phase in response to the drug. This is the first demonstration that quinoxaline exerts its toxic effect likely by inducing oxidative DNA damage causing cell cycle arrest. We suggest that clinical applications of quinoxaline and its derivatives should entail targeting cancer cells with defective cell cycle arrest.

Biography

Professor Dindial Ramotar obtained his Ph.D. in 1989 from McGill University, and post-doctoral training at Harvard University. He became a full professor in 2007 at the University of Montreal, Canada. In 2019, he moved to Hamad Bin Khalifa University, Doha, Qatar. He has consistently maintained research fundings, trained over 90 graduate students and Post-Doctoral fellows, and published over 135 peer-reviewed studies. Professor Ramotar served on several national and international research grant and award panels. He has obtained several competitive fellowships and distinctions including the National Cancer Institute of Canada Career Scientist Award. His research focuses on the mechanisms of (i) drug resistance, and genomic stability.

Harrindra Seepersaud
Walden University, USA

Breast Cancer Knowledge, Attitude, and Screening Practices among Hispanic/Latino Women

Nearly 1 out of every 8 women will develop breast cancer during her lifetime, making breast cancer the most common noncutaneous malignancy in women, particularly among the Hispanic/Latino population. Hispanic/Latino women are more likely than non-Hispanic/Latino women to be diagnosed with breast cancer after the disease has progressed to a fatal stage. This quantitative study measured how knowledge, attitude, and screening practices affect the prevalence and outcomes of breast cancer cases among Hispanic/Latino women while controlling for socioeconomic status factors, using social cognitive theory as a framework. This research uses secondary data analysis of a cross-sectional survey study, the 2014 Health Information National Trends Survey, which collected pertinent breast cancer health information on the Hispanic/Latino population in the United States. Descriptive characteristics were derived from a sample population of 3,677, a logistic regression analysis model was used to compute crude odds ratio and confidence interval. The findings revealed that Hispanic/Latino women had a positive attitude toward information sources such as physicians and medical facilities; however, the findings indicate Hispanic/Latino women had negative attitude when these individuals lacked information sources. There were notable differences in how frequently Hispanic/Latino women access screening practices, due to income, knowledge, culture, and attitudes toward a health condition like breast cancer. The findings revealed an opportunity for health professionals to promote breast cancer awareness by educating Hispanic/Latino women about the importance of screening practices and behavioral compliance to reduce their late-stage diagnoses of breast cancer.

Biography

Harrindra Seepersaud has completed his PhD at the age of 32 years from Walden Unversity and a Doctorate in medical sciences at Touro University. He is a faculty Health Sim Research specialist at Mount Sinai Health System and Faculty Researcher at Stonbyrook University, he is also professor at St. Paul School of Nursing and have 18 publications.

Dyar Mudhafar Salman
Hawler Medical University, Iraq

The siRNA-based blockade of oncogenes and other positive regulator of carcinogenesis in gastric adenocarcinoma: what's next step?

Gastric cancer continues to have a high death rate despite advancements in their diagnosis and treatment. Novel treatment techniques are thus desperately needed. This is where doublestranded RNA molecules known as small interfering RNA (siRNA), which may selectively target the mRNA of disease-causing genes, may find use in medicine. For siRNAs to function properly in the human body, they must be shielded from deterioration. Furthermore, in order to maintain organ function, they must only target the tumor and spare normal tissue. siRNAs have been designed using clever delivery mechanisms including polymers and lipids to achieve these objectives. Although siRNA protection is not hard to acquire, it is still challenging to target cancer cells with them. Here, we first discuss the basic characteristics of gastric cancer before describing the properties of siRNA and typical delivery methods created specifically for gastric tumors. Lastly, we provide a succinct overview of research using siRNAs to treat gastric tumors.

Biography

Dyar has completed his B.Sc. at the age of 22 years from Tishk International University and currently studies M.Sc. degree from Hawler Medical University College of Pharmacy. He is also a team leader in the pharmaceutical marketing in Irbil.

Zhang Jingsong
University of South Florida College of Medicine, USA

Advances in Immunotherapy in Treating Metastatic Prostate Cancer

Death from metastatic prostate cancer (mPC) is projected to increase from 375,000 in 2020 to 700,000 in 2040 globally. There is an urgent need to develop new treatments for mPC. Several failed phase 3 trials have shown a limited role of immune check point inhibitor either as single agent or in combination for mPC. With the development of targeted radioligand therapies, bispecific T cell engagers (BiTEs), antibody drug conjugates and chimeric antigen receptor T cell (CAR T) therapies, tumor associated cell surface antigens have emerged as new therapeutic targets in mPC. Here we will discuss ongoing and completed clinical trials testing BiTEs and CAR T to target prostate-specific membrane antigen (PSMA), six transmembrane epithelial antigen of the prostate 1 (STEAP1), kallikrein related peptidase 2 (KLK2), prostate stem cell antigen (PSCA) and delta-like protein 3 (DLL3) in mPC. Pros and cons of different treatment strategies and future directions on sequential or combinational therapy will also be discussed.

Biography

Zhang is a Genitourinary Oncologist and Interim Vice Chair of the Department of Genitourinary Oncology at Moffitt Cancer Center. He is also an Associate Professor of Oncology and Internal Medicine at the University of South Florida College of Medicine. His primary research interest is in integrating tumor evolution dynamics into the treatment for advanced prostate cancer. As the clinical research Director of Moffitt Cancer Center's Genitourinary Oncology Department, he has been the Principal Investigator (PI) and Co-Investigator of more than 50 phase I, II, and III clinical studies since joining Moffitt in July 2010. He is also the Co-Investigator of R21, R01, U01, U54 grants to study adaptive androgen deprivation therapy and immunotherapy in metastatic prostate cancer. Dr. Zhang received his medical degree from Peking Union Medical College in China, followed by a Ph.D. in pathology from the University of Southern California. He served as a post-doctoral research fellow at Children's Hospital Los Angeles, before pursuing a residency in internal medicine at New York Downtown Hospital and a fellowship in hematology/oncology at the University of Michigan Comprehensive Cancer Center. Dr. Zhang has been published in numerous medical journals and is board certified in both medical oncology and internal medicine. He is fluent in English and Chinese.

Alexandra Acco
Federal University of Paraná, Brazil

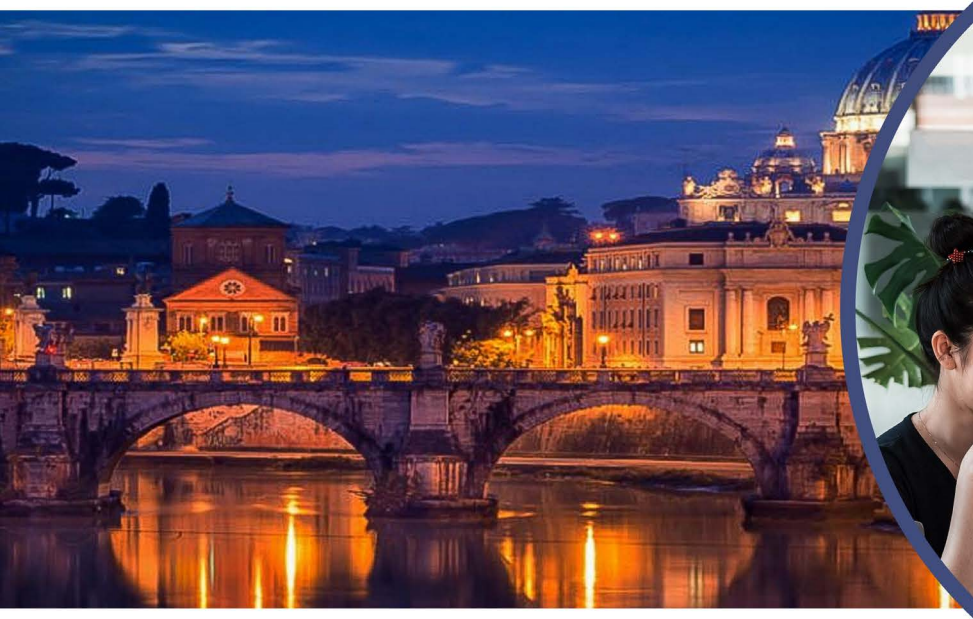
CYP1B1 and CYP2B6 expression in a cohort of women with breast cancer and the correlation with tumor aggressiveness and treatment outcomes

CYP1B1 and CYP2B6 enzymes can plays a role in cancer development. The detection of these enzymes in breast cancer (BC) tissue may indicate tumor aggressiveness and treatment response. 365 BC women samples from the Erasto Gaertner Hospital in Curitiba, Brazil (Ethical approval - CONEP23709119.3.0000.0098) were prepared for immunohistochemical staining for CYP1B1 and CYP2B6 using microarray. The data were correlated with therapeutic protocols, tumor classification and the survival of patients. Also bioinformatic tolls were used to explore the transcriptional regulations of the enzymes. Overexpression of CYP1B1 was found in 75% of samples, particularly in negative estrogen and progesterone receptors (ER-; PR-) tumors and patients who died, indicating a link with tumor aggressiveness. Database analysis also showed a positive correlation between CYP1B1 and genes directly associated with breast carcinogenesis. The drugs in the therapy did not alter CYP1B1 levels, but the response to treatment was only partial. Regarding the CYP2B6, it was overexpressed in 80% of BC samples, particularly among those with ER- and PR-, and was higher in patients receiving neoadjuvant treatment, suggesting a CYP2B6 induction by cyclophosphamide, included in all treatment protocols. However, no difference in mortality rates was found among patients with high and low CYP2B6 expression. Thus, CYP1B1 is positively correlated with breast cancer malignancy and tumor progression, while CYP2B6 overexpression is linked to partial responses in neoadjuvant therapy and cyclophosphamide auto- induction. These findings highlight the importance of both enzymes in BC, with CYP1B1 as a potential biomarker for malignancy and CYP2B6 as an indicator of treatment response. Both enzymes could be pharmacological targets for breast cancer interventions.

Biography

Alexandra Acco is a Professor of Pharmacology at UFPR (Curitiba – PR – Brazil), coordinates the Pharmacology and Metabolism Laboratory, and supervises undergraduate, master and doctoral students, which produce researches in oncology and hepatology area. Along the carrier she has published approximately 80 scientific articles.

Keynote Speakers
Day 3



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

Upali Samarajeewa
University of Peradeniya, Canada

Challenges in Handling Pre-harvest Microbial Food Safety Hazards in Fish

Fish is highly susceptible to microbial spoilage due to its nutrient rich composition. Rising ocean temperatures, transport of microorganisms by marine vessels across the oceans, and anthropogenic activities adding pathogenic microorganisms to coastal seas, trigger pre-harvest microbial hazards. The harmful algal blooms are spreading towards polar regions due to global warming of surface waters as seen around Atlantic Oceans and Salish sea. The biotoxins from the algal blooms move up the marine food web, on consumption by small fish and crustaceans. The Ballard water discharged from ships mid-oceans spread toxic algae into hitherto uncontaminated ecosystems, as seen around Rupa Islands. The spread of algae continuously reduces the natural fish breeding areas available for capture. The water discharged directly into seas from rivers, through estuaries, and lagoons brings microbial contaminants. The freshwater in rivers tends to carry nutrients from lands and animal waste along with pathogenic microorganisms capable of surviving in brackish water entering fish pre-harvest. Increased populations of Vibrio parahaemolyticus and Vibrio cholera occur in locations where fresh water mix with sea water and in seas where summer temperatures increase beyond 19 oC, in Asian and Australian fishing areas. Plastics serve as vehicles carrying Vibrio species into new environments in oceans and into guts of fish. There is need to develop databases for machine prediction of microbial contamination of oceans with the view to predict and recognize areas for harvesting fish, as pollutions and microbial contaminations in the marine environments are beyond human control.

Biography

Upali Samarajeewa is now retired after a 30-year career as an academic and researcher at the University of Peradeniya, Sri Lanka. His primary field is Food Science and Technology, with expertise in laboratory accreditation and food safety. Throughout his career, he worked in 20 countries across Asia, Africa, and Jamaica under organizations such as the United Nations Development Organization, the Asian Development Bank, the United Nations Development Program, the World Bank, and the Food and Agriculture Organization. He has received several national awards for research and was the founding Head of the Department of Food Science. Currently, he continues his work as an international consultant on laboratory accreditation, operating remotely from Canada.

Ivan Nastasijevic
Institute of Meat Hygiene and Technology, Serbia

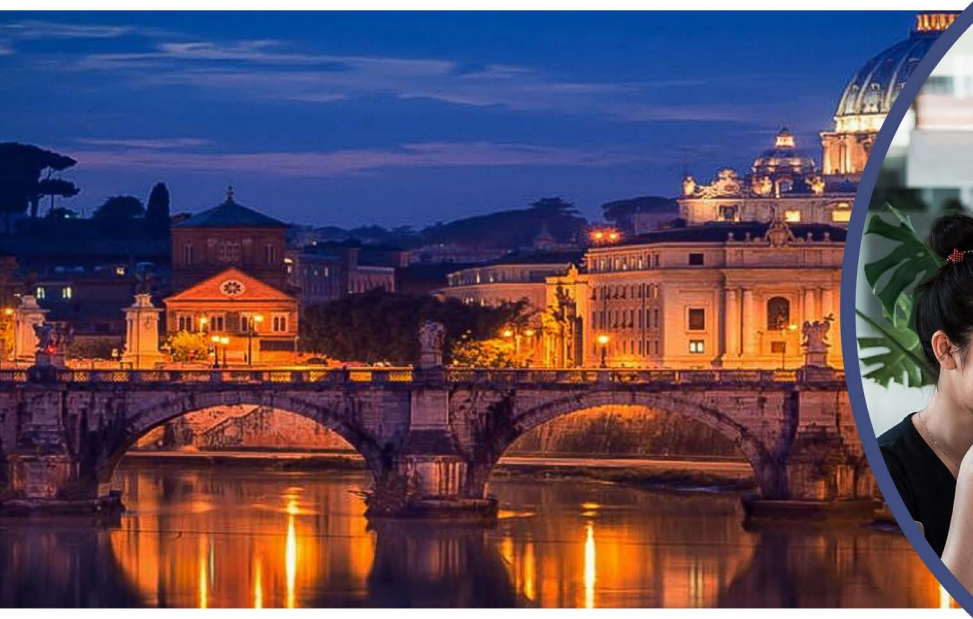
Microfluidic Biosensors for Simultaneous and Multiplex Detection of Animal Health, Welfare and Food Safety Biomarkers in the Meat Chain

The meat production chain is complex and begins with the Pre-harvest (feed, farm biosecurity, herd/flock health status, animal welfare, transportation, livestock market/abattoir lairage), followed by Harvest (slaughter, dressing, chilling) and Post-harvest module (deboning, meat processing, packaging, distribution, retail, consumer). Consumers` awareness increased globally regarding animal health, welfare and food safety/quality, food fraud, including food systems` sustainability and impact of meat production chain to the climate change. Competent authorities and retail chains also demand proper and accurate information on animal health, welfare and meat-borne food safety hazards in real time to make evidence-based decisions. The transformation of traditional meat value chain towards better sustainability depends on reliable and affordable tools to optimize such transformation and fulfil food safety objectives. Sensing systems (biosensors), as `Lab-On-A-Chip` and `Point-Of-Care` devices suitable for field application, can play an important role and become a part of the solution for transformation of food systems towards sustainable and climate-smart agri-food chain, including within the meat production chain in farm-to-fork continuum. Biosensors allow early and accurate quantitative detection of different animal health and welfare biomarkers, including detection of food-borne hazards, to support food safety risk management in both, `traditional` and `novel` (e.g. cell-based meat) food value chains for the benefit of global population. Further research should be focused on development of multiplex sensing systems with capability for simultaneous detection of selected biomarkers to support integrated approach toward food (meat) system` transformation enabling early information on animal health and welfare relevant for farm production parameters, as well as food safety.

Biography

Dr. Ivan Nastasijević is an experienced food safety scientist with diversified experience related to applied research, teaching and outreach programme tailored for the meat industry. His expertise include risk assessment, food safety management system (HACCP), risk-based meat inspection, Longitudinally Integrated Safety Assurance (LISA), control strategies of zoonotic food (meat) borne pathogens and AMR along the meat chain, as well as risk communication. His current research interest is related to development and application of multiplex biosensors in farm-slaughterhouse continuum to support animal health, welfare and food safety management based on Food Chain Information (FCI) within integrated meat safety assurance system.

Speakers
Day 3



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

John R. Cirrito
Washington University School of Medicine, USA

Breathalyzer for rapid, direct detection of SARS-CoV-2 viral particles in exhaled breath

Respiratory infections are among the top two causes of treat-and-release Emergency Department (ED) visits in the USA. Globally, respiratory infections accounted for ~42.8% of all-cause illnesses in 2019. The combined forces of rapid urbanization, globalization, and easy international travel have heightened the risk of widescale transmission of respiratory infections, thereby posing an increased threat to public health. This strain became especially evident in the recent COVID-19 pandemic, which resulted in ~6.9 million deaths globally.

We developed a breathalyzer to rapidly detect SARS-CoV-2 in a single breath. It combines recent advances in breath aerosol sampling technology and an ultrasensitive biosensing technique. A research prototype of the device, recently published in ACS Sensors, will serve as the platform for the development and validation of the multi-pathogen biosensor/breathalyzer. Preliminary human data from COVID-19 patients collected through clinical trials conducted at the WUSTL Infectious Disease Clinical Research Unit (IDCRU) has demonstrated the feasibility and specificity of the technology in breath-based diagnosis. The time from breath into the device to read-out of infection (or not) is under 60 seconds. The biosensor detects all current strains of SARS-CoV-2 and is sensitive to 20-50 viral particles per milliliter depending on the strain.

The electrochemical sensor uses voltammetry to measure oxidation of tyrosine amino acids within a protein. Oxidation is the release of electrons that the carbon fiber electrode detects as a change in current. The amount of current is proportional to the amount of protein present. The biosensor uses a llama nanobody (antibody) that is covalently attached to the surface to provide specificity and concentrate the protein at the electrode for measurement. The device collects an exhaled breath condensate on to a chilled hydrophilic surface.

Rapid detection of a respiratory pathogen can be used in mass screening of individuals as they file into indoor spaces, such as airport security areas, office buildings, conference centers, mass transit hubs, or military vessels. Having test turnaround times of 60 seconds allows for large queues of individuals to be screened rapidly, then either admitted or quarantined away from the group. In addition, the breathalyzer could also be used in point-of-care (POC) locations, such as local clinics or pharmacies. The team at Washington University has worked in close conjunction with Y2X Life Sciences with an eye on commercialization throughout the research and development phases.

Biography

As an undergrasduate, John worked with Dr. Michael Numan (Psychology) studying the neural circuits underlying maternal avoidance in rats. He graduated in 1998 and spent a year working in Research and Development at NEN Life Sciences (now Perkin Elmer) developing research reagents, including some that his own lab still uses. In 1999 he started his PhD in Neuroscience at Washington University in the lab of Dr. David Holtzman

(Neurology) studying Alzheimer's disease. Much of his PhD work focused on the proteins and cellular pathways that eliminate amyloid-beta (Aβ) from the brain. Here he developed the first use of in vivo microdialysis to study Aβ kinetics in the brain of a living mouse. John received his PhD in 2005, then became a post-doc in the lab of Dr. Steven Mennerick (Psychiatry) where he learned to pretend to be an electrophysiologist to study synaptic processes that regulate Aβ generation. He started his own laboratory (Neurology) at WashU in 2010, received tenure in 2015. Around 2011, the lab developed a novel micro-immunoelectrode (MIE) that uses amperompetry to detect rapid changes in A and tau in a mouse brain. The biosensors have an antibody attached to the electrode surface to make it specific to a particular protein. In August 2020, they adapted the format of the electrode to detect SAR-CoV-2. The biosensor can detect virus 20-50 viral particles per milliliter in under a minute. That biosensor is being deployed in a breathalyzer and an indoor air quality monitor. John is a scientific founder of Y2X Life Sciences, the company that has licensed the technology for commercialization.

Goran Stojanović
University of Novi Sad, Serbia

Textile-based and food-based sensors for biomedical applications

Innovative sensors are all around us and can revolutionize the biomedical sector. All of us wear various textile every day. If we wish to detect or to monitor important parameters from our body than it is logical to embed sensors in our cloth or to use textile to develop sensors for biomedical applications. We will present the following textile-based sensors: pressure sensors on insole for monitoring human gait pattern, sensor which can detect presence of date rape drugs in drinks and MXene-modified wearable textile-based non-invasive sensors for pH monitoring. In addition, we will present different textile-based heaters for beauty sector which can improve cosmetic treatment.

The mission of the recently emerged green electronics concept is to provide inherently "benign" electronic solutions, which would allow scaling down the toxic waste production across the life cycle of electronic product, and enable a sustainable path during its design, manufacture, use, and ultimate disposal. This ambitious field requires unconventional solutions, and conceptualizes around building nontoxic, human- and environmentally friendly, energy efficient, and low-cost electronics utilizing a vast repository of readily available natural resources. We will present the following food-based and food waste-based sensors: passive resonant sensors which are manufactured from food to monitor wireless through inductive coupling different parameters of our health from oral cavity to the gut, human bite force sensors created from food materials and different electrodes and sensors fabricated from food waste, such as potato peel which have been tested for biomedical applications.

Biography

Prof. Dr. Goran Stojanović is a full professor at Faculty of Technical Sciences (FTS), University of Novi Sad (UNS), Serbia. He received a BSc, MSc and a PhD degree in 1996, 2003 and 2005, respectively, from FTS-UNS, all in electrical engineering. He has 27 years of experience in R&D. He is an author/co-author of 180 papers in peer-reviewed journals with impact factors, 5 books, 5 patents, 2 chapters in monographs. H-index: 28, Citations: 2969. Prof. Stojanović has been a supervisor of 14 PhD students, 40 MSc students and 60 diploma students at the FTS-UNS. He has more than 18 years' experience in coordination of EU funded projects, with total budget exceeding 22.86 MEUR..

Francesco Lavecchia
Università RomaTre, Italy

Development of a Bio-Field Effect Transistor Platform for Detecting miR-155 Under Physiological Conditions

Recently, bio-field effect transistor (bioFET)-based devices have attracted significant interest due to their sensitivity and specificity, which are comparable to conventional methods. In a FET device, current flows between two electrodes through a semiconductor channel, while a third electrode (gate) regulates conductance. When biological probes are immobilized on the gate surface and capture a target, they release charges to the gate, altering the gate voltage and influencing the source-drain current. This current variation is directly correlated with the concentration of the target. This technology was exploited to detect different biomolecules, including microRNAs which are small non-coding RNAs involved in the onset and progression of many disease. Despite this straightforward operating principle, several challenges hinder the transition of bioFET technology from academia to clinical diagnostics such as the choice of probes and the hybridisation conditions.To address these issues, we used a bioFET platform conjugated with an innovative synthetic peptide nucleic acid (PNA) probe to directly detect human microRNA 155 (miR-155), whose altered expression is associated with various pathologies, including different cance types. Before conducting biosensing experiments, we evaluated and characterized the interaction kinetics between immobilized PNA and miR-155 using Surface Plasmon Resonance (SPR) technology. The results indicate that PNA exhibits high affinity for miR-155. Consequently, when integrated with the proposed bioFET system, this probe enables fast, specific, direct, and label-free detection of miR-155, achieving a limit of detection (LOD) of approximately 5 nM under physiological-like conditions.

Biography

Dr. Francesco Lavecchia di Tocco earned his Master's Degree in Biology from the University of Perugia in 2021. Following this, he got a fellowship in 2022, funded by the Italian Association for Cancer Research (AIRC), focusing on the development of biosensors for microRNAs at the Biophysics and Nanoscience Center (BNC) of the University of Tuscia. He is currently in his second year of a PhD program in Biomedical Sciences and Technologies at the University of Roma Tre, focusing on electrochemical biosensors for detecting microRNA 155. His early research contributions have resulted in the publication of two papers.

Jianglan Long
Capital Medical University, China

Structural characterization of Astragalus polysaccharide-D1 and its improvement of low-dose metformin effect by enriching Staphylococcus lentus

To explore the adjuvant therapy drugs of low-dose metformin, one homogeneous polysaccharide named APS-D1 was purified from Astragalus membranaceus by DEAE-52 cellulose and Sephadex G-100 column chromatography. Its chemical structure was characterized by molecular weight distribution, monosaccharide composition, infrared spectrum, methylation analysis, and NMR. The results revealed that APS-D1 (7.36 kDa) consisted of glucose, galactose, and arabinose (97.51%:1.56%:0.93%). It consisted of →4)-α-D-Glcp-(1→ residue backbone with →3)-β-D-Galp-(1→ residue and terminal-α/β-D-Glcp-(1→ side chains. APS-D1 could significantly improve inflammation (TNF-α, LPS, and IL-10) in vivo. Moreover, APS-D1 improved the curative effect of low-dose metformin without adverse events. APS-D1 combined with low-dose metformin regulated several gut bacteria, in which APS-D1 enriched Staphylococcus lentus to produce L-carnitine (one of 136 metabolites of S. lentus). S. lentus and L-carnitine could improve diabetes, and reduction of S. lentus L-carnitine production impaired diabetes improvement. The combination, S. lentus, and L-carnitine could promote fatty acid oxidation (CPT1) and inhibit gluconeogenesis (PCK and G6Pase). The results indicated that APS-D1 enhanced the curative effect of low-dose metformin to improve diabetes by enriching S. lentus, in which the effect of S. lentus was mediated by L-carnitine. Collectively, these findings support that low-dose metformin supplemented with APS-D1 may be a favorable therapeutic strategy for type 2 diabetes.

Biography

Jianglan Long, an ethnic minority from China, has completed her PhD from Capital Medical University. She is mainly engaged in intelligent molecular diagnosis of type 2 diabetes (pre-diabetes) and research on drug intervention mechanism. She has published more than 24 papers in reputed journals (such as International Journal of Biological Macromolecules and Clinical and Translational Medicine) and has obtained six Chinese authorized patents.

Noura Tassi
King Mohammed VI University, Morocco

The role of the infectious diseases department in the management of antimicrobial agents: Prospective study of medical advices given by the Infectious Diseases Department of the Mohammed VI University Hospital, Marrakech

Introduction: The aim of this study was to evaluate the role of the infectious diseases department in optimizing the use of antibiotics in the hospital.

Method: We carried out a prospective study of all medical advice performed by the Infectious Diseases Department of the Marrakech University Hospital, over a six-month period.

Results: The number of medical advices was 153. Surgical departments accounted for 56 % of all requests for advice, compared with 44% for medical departments. The diagnosis of infection was retained in 76% of cases. Infections were nosocomial in 29% of cases and community-acquired in 46%. Among documented infections, multi-resistant bacteria were isolated from 11% of patients, Pseudomonas aeruginosa was the most common microorganisme. Escherichia coli and Klebsiella pneumoniae were the most frequently implicated bacteria in multi-resistant infections. The actions suggested by the referring physician were to start antibiotic therapy in 30% of cases, stop antibiotic therapy in 16% of cases, modify the antibiotic therapy in 23% of cases, and adjust the dose in 11% of cases. The same treatment was maintained in 11% of cases.

Conclusion: The study shows that the infectious diseases team's advice allows optimizing or improving the quality of antibiotic prescribing.

Biography

Pr Noura Tassi Born on the 17th of July, 1973, in Tangier, Morocco. Professor of infectious diseases in medical university school of Marrakech since 2006.The head of infectious diseases department at Mohammed VI University Hospital Center in Marrakech.President of the Nosocomial infection control committee at Mohammed VI university hospital center in Marrakech. This committee also manages the Antimicrobial Stewardship program in the hospital.Former president of the Infection Control Association "ALMI" founded in2000. Vice President of the Moroccan Infection Control Society "SMALMI" recently founded in2024 to replace the Infection Control Association.

Sen Claudine Henriette Ngomtcho
University of Dschang, Cameroon

Trends in immunological markers of transfusion transmissible infections among blood donors in Mamfe District Hospital, Southwest Cameroon

The threat posed by the blood-borne pathogens is disproportionately distributed in different healthcare facilities in Cameroon. Thus, there is a need for continuous surveillance of TTIs in the country. This study aimed to assess the screening procedure for blood transfusion and determine the trend in immunological markers of TTIs among blood donors at the Mamfe District Hospital (MDH). A prospective descriptive and cross-sectional study was conducted at Mamfe District Hospital in 2022. A total of 165 blood donors were recruited and screened using both Rapid diagnostic tests and indirect ELISA for the detection of TTIs. Data generated was entered into an Excel spreadsheet and analysed using the statistical software R, version 4.2.0. Student t-test was used to compare both diagnostic techniques, and was considered significant when $p < 0.05$. The majority (75.20%) of the donors were of the O-positive blood type, repeat donors (69.10%) and were mainly family replacement and paid donors as against the voluntary blood donors (39.40% and 37.00% vs. 23.60% respectively). overall TTIs prevalence was 18.78% (31/165), with HBsAg being the most predominant marker (12.12%) followed by Treponema pallidum, HCV and HIV antibodies at 4.85% 1.21% and 0.60% respectively. Except for the HBV, The prevalence of TTIs was higher when using a single RDT than the ELISA test, and the difference was significant ($p<0.05$). Blood borne pathogens remain a major menace to safe blood transfusion practice in MDH. Therefore, the donor screening protocol in MDH should systematically incorporate a confirmation diagnostic test such as ELISA.

Biography

Sen Claudine Henriette Ngomtcho has completed her PhD at the age of 37 years from the University of Ngaoundéré-Cameroon and postdoctoral studies from the Faculty of Medecine and Pharmaceutical Sciences of the University of Dschang where she teaches Molecular Biology and Immunology. She carries research activities at the National Public Health Laboratory-Cameroon to improve disease surveillance and detect pathogens with epidemic potential. She is interested in continuous monitoring of infectious diseases and capacity building of health personnels for better care of patients.

Anil Koklu
ASELSAN Inc, Turkey

Detection of infectious disease biomarkers using electrical and optical based biosensors

The COVID-19 pandemic has shown the significance of innovative tools for disease diagnostics on the spot. The long turnaround times of generally used diagnostic tools, such as polymerase chain reaction (PCR), have limited the efforts to for getting back to the usual daily life situation. As an alternative diagnostic tool, the rapid test kits such as lateral flow assays were utilized to control the pandemic. However, the accuracy and sensitivity were always found questionable to be compared with PCR performance. Therefore user-friendly, cheap, rapid, accurate, sensitive, and portable sensors still become vital for disease biomarker detection, especially in rural areas for point of care applications. The organic electrochemical transistor (OECT) was used as a biosensor and it translates the binding event into an electrical signal. The gold electrodes were fabricated on a disposable substrate, which is later on functionalized with a uniquely engineered protein construct that specifically binds to the target virus. Owing to the high density of recognition units immobilized on the gate electrode and more importantly to large signal amplification feature of the OECT, the sensor responds to very low concentrations of the protein. However, due to the diffusion-dominated transport, the sensor requires certain time to display a difference the output signal. This incubation step is mostly a main reason of long sample-to-result times and can cause difference among the same measurement, resulting in measurement errors. One of the most suitable way to reduce incubation time and later measurement error is to utilize from the convective forces to transport the target proteins towards to the sensor area. Alternating current electrothermal flow (ACET) was cooperated with an electrochemical biosensor to accelerate the device operation. Using the SARS-CoV-2 spike protein in human saliva and nasal swab as an example target, it is shown that ACET enables protein recognition within only a few minutes of sample exposure, supporting its use in clinical practice. Other alternative techniques with an emphasis on optical biosensors will be also presented in the perspective of validation of electrochemical sensor results and the versatility of the technique.

Biography

Dr. Anil Koklu is currently a senior lead engineer in ASELSAN. He completed his B.S. degree in Mechanical Engineering at Istanbul Technical University (ITU) in 2014. He received his M.S. and Ph.D. degrees in Mechanical Engineering from Southern Methodist University (SMU) in 2019. He worked 3 year as a Research Scientist at King Abdullah University of Science and Technology. His background includes iterdiciplinary research program with close collaborations in the fields of microfluidics integrated electrochemical and optical based biosensors.

Emmanuele Andrade
University of Shizuoka, Japan.

Epigallocatechin Metabolite Produced by Human Intestinal Bacteria Modulates microRNA Expression and Prognosis Biomarkers in Colon Cancer Cells

Green tea catechins have been studied for their health benefits for many decades. These beneficial effects include anti-cancer, anti-obesity, anti-diabetes, anti-inflammatory and neuroprotective properties. The anti-cancer benefits have been reported to be related to up and down-regulation of microRNAs (miR), which are small, non-coding RNA molecules involved in cell proliferation, differentiation, apoptosis, and angiogenesis. However, studies have shown that these catechins, including the most abundant, (-)-epigallocatechin gallate (EGCG), are poorly absorbed in the intestinal tract. It is known that the microbiota plays a crucial role in catechin metabolization, degrading and producing ring-fission metabolites, increasing their bioavailability. This research aims to investigate the effects of the major metabolite of EGCG, 5-(3',5'-dihydroxyphenyl)-γ-valerolactone (M5), on microRNA expression in colorectal cancer HCT116 cells. A commercial sample of green tea extract was incubated with bacterial strains Eggerthela lenta (JCM 9979) and Flavonifractor plautii (ATCC 29863), to obtain M5. M5 was purified, and NMR and optical rotation analysis confirmed its structure. HCT116 cells were exposed to 25, 50, and 100 μM of EGCG and M5 for 24 h. Analysis for miR-494-3p and 1226-3p by RT-qPCR suggests that M5 has higher activities on miR up and down-regulation when compared to EGCG. Using prediction tools such as TargetScan and miRDB, microRNA targets were selected and analyzed by RT-qPCR. Multiple targets showed down-regulation, including VASH1 (vasohibin 1) and DUSP4 (dual specificity phosphatase 4), biomarkers related to angiogenesis and cancer progression, respectively. Further experiments are ongoing to better understand the anti-cancer activity of M5.

Biography

Emmanuele is a Brazilian academic and a first-generation university graduate. She earned her Bachelor's degree in Nutritional Sciences in 2020 and completed her Master's degree at Rio de Janeiro State University in 2022. Currently, she is a MEXT scholar and PhD candidate at the University of Shizuoka in Japan. Emmanuele has authored significant papers in recognized journals and continues to make substantial contributions to her field of study.

Tinatin Doolotkeldieva
Kyrgyz National Agrarian University, Kyrgyzstan

In vitro and in vivo screening of bacterial species from contaminated soil for heavy metal biotransformation activity

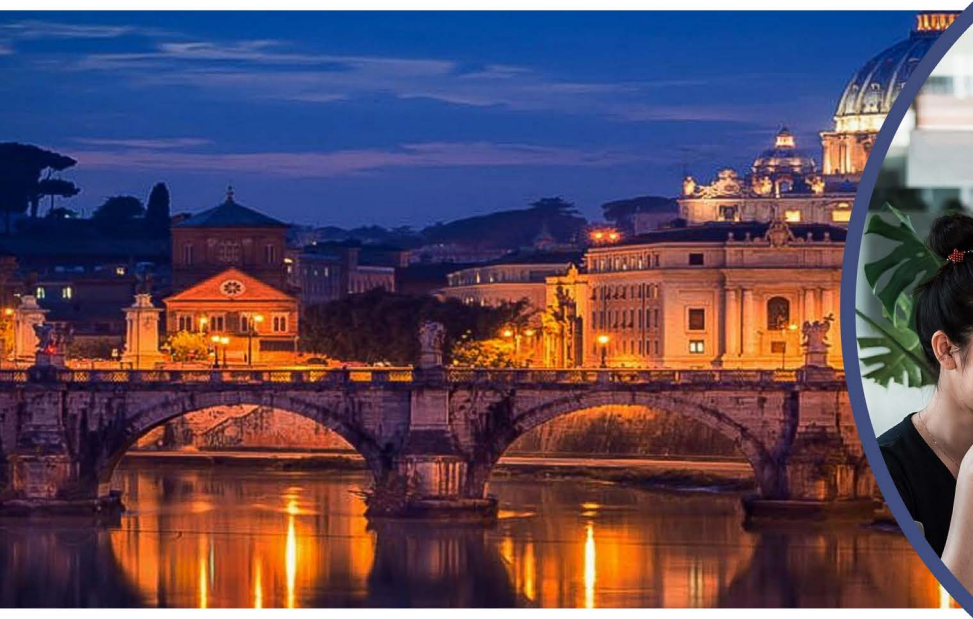
High concentrations of HMs can be severely toxic to plants, animals and humans.

Unlike organic pollutants, metals do not decompose and therefore remain in the environment for a long time. HMs can adopt various states and quickly and easily spread throughout the environment. Microorganism-based bioremediation has shown significant potential in degrading and detoxifying specific HM contaminants. In this study, we cultivated a range of bacterial strains in liquid and solid nutrient medium containing different concentrations of different HMs to select and analyze bacteria capable of transforming HMs. The bacterial strains most resistant to selected HMs and exhibiting the ability to remove HMs from contaminated soils were identified. Then, the bacterial species capable of utilizing HMs in soil model experiments were selected, and their ability to transform HMs was evaluated. This study has also generated preliminary findings on the use of plants for further removal of HMs from soil after microbial bioremediation. Alcaligenes faecalis, Delftia tsuruhatensis and Stenotrophomonas sp. were selected for their ability to grow in and utilize HM ions at the maximum permissible concentration (MPC) and two times the MPC. Lysinibacillus fusiformis (local microflora) can be used as a universal biotransformation tool for many HM ions. Brevibacillus parabrevis has potential for the removal of lead ions, and Brevibacillus reuszeri and Bacillus safensis have potential for the removal of arsenic ions from the environment. The bacterial species have been selected for bioremediation to remove heavy metal ions from the environment.

Biography

Tinatin Doolotkeldieva completed her PhD at the age of 28 years from Institute of Biology of National Academy of KR Science and postdoctoral studies from Institute of Microbiology and Virology of Kazakstan and Insitute of Industrial Microbiology of Russia. She is Professor of Horticulture and Plant Protection Department, Kyrgyz National Agrarian University,Bishkek city, Kygryzstan. Tinatin Doolotkeldieva is a member of Molecular Plant – Microbe Interaction International Society , the Asian Phyto pathological Society (ASPS), the International Society of Innovative Technologies in Organic Agriculture and the Society of Environmental Toxicology and Chemistry (SETAC). She has published more than 240 papers in reputed journals, 7 monografs , 9 patents and has been serving as an editorial board member of reputed journals.

Poster Presentations
Day 3



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

Alexandra Acco
Federal University of Paraná, Brazil

Polysaccharides extracted from tucum-do-cerrado fruits (Bactris setosa Mart) have antineoplastic effects in mice and preserve the hepatic metabolism

This study investigated the antitumoral effects of polysaccharides from tucum-do-cerrado (Bactris setosa, TUC), a palm fruit that grows in the Brazilian "Cerrado" biome. The Ehrlich carcinoma in mice was used as a breast cancer model. Additionally, the glycogen content, cytochrome P levels, and gluconeogenesis from lactate were assessed in the liver of healthy animals. Tumor-bearing female mice were orally treated with 50 and 100 mg.kg-1 of TUC or vehicle, once a day, or with 1.5 mg.kg-1 methotrexate via i.p., every 3 days, along 21 days. Both doses of TUC reduced the tumor weight and volume. In the tumor tissue, it decreased GSH and IL-1β levels, and increased LPO, NAG, NO and TNF-α levels. The tumor histology showed necrosis and leukocytes infiltration. The metabolic effects of TUC were investigated by measurement of total cytochrome P (CYP) and glycogen in tumor-bearing mice, and by ex vivo liver perfusion on non-bearing tumor male mice, using lactate as gluconeogenic precursor. Metabolically, the hepatic glucose and pyruvate productions, oxygen uptake, and the total CYP concentration were not modified by TUC. Thus, the soluble dietary fibers that were extracted from tucum, composed primarily of glucuronoarabinoxylan and glucomannan, exerted antineoplastic effects against Ehrlich carcinoma in mice, modulating oxidative stress and inflammation in the tumor microenvironment, without causing changes in gluconeogenesis or hepatotoxicity. Thus, these polysaccharides may have therapeutic potential against solid tumors, mainly mammary tumors.

Biography

Alexandra Acco is a Professor of Pharmacology at UFPR (Curitiba – PR – Brazil), coordinates the Pharmacology and Metabolism Laboratory, and supervises undergraduate, master and doctoral students, which produce researches in oncology and hepatology area. Along the carrier she has published approximately 80 scientific articles.

Adeline Castro
Tsukuba University, Japan

Antibacterial properties and endothelial protection of Omental Adipose Tissue-Derived Mesenchymal Stem Cell Conditioned Medium

Surgical site infection (SSI) poses a significant risk following cardiac surgery, contributing to increased morbidity and mortality rates among patients. While prophylactic antibiotic therapy is commonly employed to mitigate this risk, it often entails adverse effects. This underscores the necessity for alternative approaches, especially for medically vulnerable populations. Previous clinical investigations have underscored the efficacy of omentum grafts in cardiothoracic surgery for preventing SSI. The omentum, rich in growth factors, and Mesenchymal Stem Cells (MSCs), also expresses antimicrobial peptides (AMPs), which display broad-spectrum efficacy and reduced susceptibility to bacterial resistance. Consequently, it emerges as a promising candidate for tissue protection and infection prevention postoperatively. However, limited research exists concerning the antibacterial properties of adipose tissue-derived MSCs. Furthermore, their ability to safeguard other cell against bacterial exposure remains underexplored. Therefore, this study sought to investigate the antimicrobial efficacy of MSCs isolated from three ligane of adipose tissue, alongside their impact on human endothelial cells' survival and functionality. The findings revealed that subcutaneous and omental MSCs significantly inhibited S. aureus and E. coli growth, while maintaining endothelial cell morphology and functionality following bacterial exposure. We suggest that MSCs can prevent infections and sustain endothelial integrity in pathological settings. Such an approach holds potential for optimizing infection control protocols and improving clinical outcomes.

Biography

Adeline Castro is a medical doctor who graduated from Universidad Privada San Martín de Porres in Peru. She is currently a scholarship recipient from the Ministry of Education in Japan, where she is pursuing her PhD in a laboratory focused on regenerative medicine and stem cell biology. In addition to her academic pursuits, She holds the position of Executive Manager at GAIYOU GROUP S.A.C, a Peruvian company dedicated to the development of stem cell-derived products, bridging the gap between bench research and general public.

Nazek Abuhalaweh
Hashemite University, Jordan

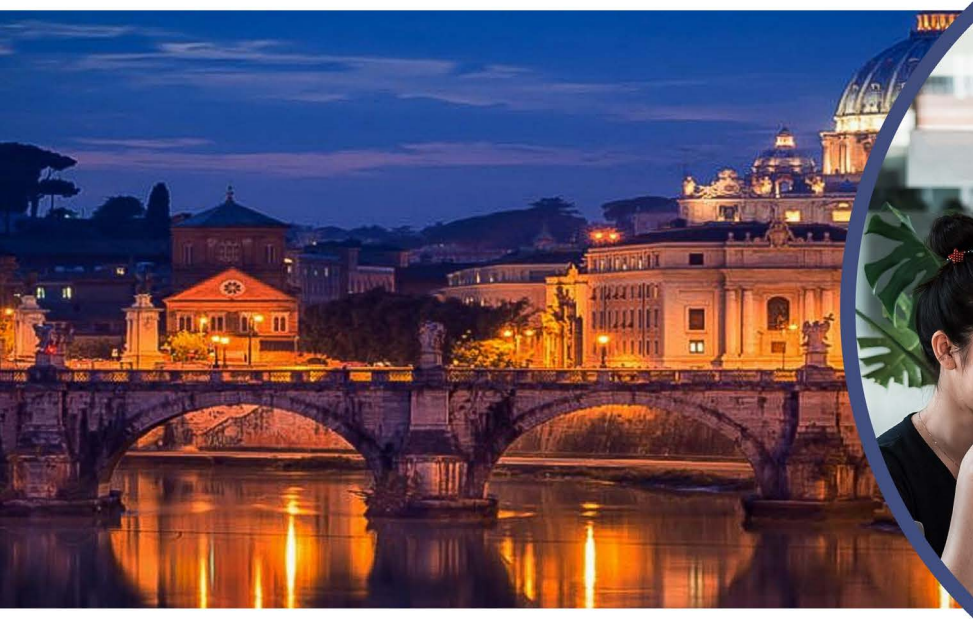
A rare presentation of pulmonary hypertension

Pulmonary Artery Stenosis (PAS) associated with systemic congenital diseases such as Williams Syndrome and Alagille syndrome is well described. However, acquired PAS is less common and bilateral PAS seldom described. Tamura Y et al described a cohort of 44 patients. Breathlessness on exertion was a common presenting symptom in 80% of patients and all had severe pulmonary arterial hypertension, idiopathic PAS was the predominant cause. A separate cohort study by Lock J et al supports Tamura's findings with dyspnoea and fatigue on exertion a universal presenting complaint. In this case a diagnosis of acquired bilateral pulmonary artery stenosis secondary to a probable large vessel vasculitis with investigations favouring Takayasu's arteritis was made following discussion at pulmonary hypertension and rheumatology MDTs. We describe here treatment with bilateral percutaneous pulmonary angioplasty and stenting with successful reduction in haemodynamic pressures and an objective improvement in the patient's exercise capacity.

Biography

Dr. Abuhalaweh has finished her Master's Degree in Internal medicine from the University of Jordan, Amman – Jordan. She finished a 3 year fellowship program in respiratory medicine from University Hospital of Southampton, Southampton – United Kingdom. She is currently working as an assistant professor in Respiratory medicine in Hashemite University, and a respiratory physician in New Zarqa Governmental Hospital.

Virtual Presentations
Day 3



November 18-20, 2024 | Rome, Italy

Hampton By Hilton Rome North Fiano Romano

Rajita Pappu
Genentech Inc., USA

Obligate role for Rock1 and Rock2 in adult stem cell viability and function

The ability of stem cells to rapidly proliferate and differentiate is integral to the the steady-state maintenance of tissues with high turnover such as the blood and intestine. Mutations that alter these processes can cause primary immunodeficiencies, malignancies and defects in barrier function. The Rho-kinases, Rock1 and Rock2, regulate cell shape and cytoskeletal rearrangement, activities essential to mitosis. Here, we use inducible gene targeting to ablate Rock1 and Rock2 in adult mice, and identify an obligate requirement for these enzymes in the preservation of the hematopoietic and gastrointestinal systems. Hematopoietic cell progenitors devoid of Rho-kinases display cell cycle arrest, blocking the differentiation to mature blood lineages. Similarly, these mice exhibit impaired epithelial cell renewal in the small intestine, which is ultimately fatal. Our data reveal a novel role for these kinases in the proliferation and viability of stem cells and their progenitors, which is vital to maintaining the steady-state integrity of these organ systems.

Biography

Rajita Pappu completed her PhD from Washington University and postdoctoral studies from the University of Califronia San Francisco in 2007. She is the Senior Director of the Immunology Discovery Department at Genentech Inc.

Maria Talmon
University of Piemonte Orientale, Italy

Skeletal muscle cells differentiated from urine-derived stem cells as a functional tool to investigate new players in muscle contraction/relaxation

Encyclopedia of Bioanalytical Methods for Bioavailability and Bioequivalence Studies of Pharmaceuticals (E-BABE): It is a unique encyclopedia involving bioanalytical methods for bioavailability and bioequivalence (BA/BE) studies of pharmaceuticals for suitable method selection with thousands of combinations and searches against these methods. Most scrutinized literature was collected from different sources including PubMed. This database has been curetted using published methods for all most all pharmaceuticals. Required information for regular method development/validation such as IUPAC name, structure, solubility, chromatographic conditions, instrumentation information like HPLC, LCMS detection parameters, sample preparations, recovery details, limit of detection and limit of quantification, Tmax, Cmax etc., for routine application in BA/BE studies of pharmaceuticals was incorporated including official pharmacopeias information such as European Pharmacopeia, Japan Pharmacopeia and US Pharmacopeia. Database includes drug based bioanalytical methods covering most required fields and external database links of important drug portals such as drug bank, Rxlist, MEDLINE plus, KEGG Drug ID, KEGG Compound ID, Merck manual, PubChem compound ID, PubChem substance ID and USFDA. Searching/querying the database is through drug name, chemical formula or structural search by smiles format. Keen selections of bioanalytical methods for pharmaceutical analysis or regular quality control are also possible with E-BABE. E-BABE was built understanding the needs of pharmaceutical industry and laboratories including CROs working on BA/BE studies. Presently it has nearly of 5,000 methods and it will be updated regularly.

Biography

Maria Talmon graduated in Cellular and Molecular Biology at the University of Torino (Italy) and obtained their Ph.D. in 2016 in Biotechnology for Human Health at the University of Piemonte Oriental (UNIUPO, Novara, Italy) with a thesis entitled “Cell and gene therapy of Hemophilia A”. From 2016 to 2022 she worked as a senior postdoc in the lab of pharmacology of the Department of Health Sciences UNIUPO. In particular, she studied the calcium homeostasis downstream of bitter taste receptors located in extra-oral tissues, highlighting their bronchodilation and anti-inflammatory effect in the respiratory system. Since June 2023 she has been an RT at the Department of Pharmaceutical Science, UNIUPO. During her career she published 22 peer-reviewed publications (H-index: 9, citations: 223, source Scopus) and received several awards: ● Best Oral Presentation Award at the VIII SYRP: S.I.Fit. Young Researchers Project meeting, 2019, Imola, Italy ●Young Investigator Award at the XXIII International Society of Thrombosis and hemostasis (ISTH) Congress, 2015, Toronto, Canada ●Young Investigator Award at the XXII International Society of Thrombosis and haemostasis (ISTH) congress, 2013, Amsterdam, The Netherlands. In 2020 she received a grant from “The Roche per la Ricerca Indipendente” foundation for a project entitled “SNPs of bitter taste receptors as a predictive marker of asthma in children”

Thamil Selvee Ramasamy
Universiti Malaya, Malaysia

Leveraging stem cells in disease modelling, drug discovery and therapeutic development

Stem cells are increasingly used to model human disorders, employed as a tool in drug discovery and leveraged for their therapeutic value. In our lab, we have successfully developed stem cell-derived organoids or 3D cultures of the miniature liver, brain, and cartilage along with cancer stem cell models to explore many aspects of biology- molecular and cellular mechanisms, drug testing systems and transplantable cellular resources. From the perspective of regenerative medicine for developing treatment for aging associated diseases, we have developed a multiple-cell system using stem cells to study both degenerative diseases and characterise the therapeutic value of stem cells as single and combination therapy as potential treatment modalities for various degenerative conditions. In order to make stem cell transplantation a success, we have been developing rejuvenation strategies for ageing stem cells and expanding their therapeutic value by improving the stem cell bioprocessing pipeline in collaboration with industrial partners. While one arm of the lab is focusing on regenerative medicine, the other arm is dedicated to developing cancer stem cell models and key regulatory targets through integrated multi-omic bioinformatics analysis and targeted regulators that will enable the targeting of the resistant population in a tumour, therefore eradicating cancer. In this talk, I will highlight how we can leverage stem cell biology to understand disease mechanisms, modelling the diseases and leverage their potential for realising regenerative medicine, along with how stem cell may answer some of your research questions and produce a work with high scientific merit.

Biography

Dr. Ramasamy earned her PhD in Clinical Medicine Research Programme (specialisation: human embryonic stem cell research) from Imperial College London, UK. She is heading the Stem Cell Biology Laboratory at University of Malaya, Malayisa. Unravelling the role of stem cell in development of therapy for ageing-associated degenerative diseases and targeting cancer resistance is the primary focus of her research team. Her research work has an excellent scientific merit and she has been proactively working with various research teams at national and international institutions and industry to develop theraputics to treat degenerative conditions and cancer.

Wonbin Kim
Seoul National University Hospital, South Korea

A Phase II Randomized, Double-Blind, Placebo-Controlled Trial on the Use of Allogeneic Adipose-Derived Mesenchymal Stem Cells for Treating Lateral Epicondylosis

Background: This study aimed to evaluate the safety and efficacy of allogeneic adipose-derived mesenchymal stem cells (allo-ASC) for the treatment of lateral epicondylosis (LE). Mesenchymal stem cell therapy presents a promising regenerative treatment for tendinopathy, and this trial sought to compare intra-tendon injections of allo-ASC against a control treatment.

Methods: Ten patients with LE persisting for over six months were recruited and randomly assigned to either the cell group or control group. Injections were performed under sonographic guidance, delivering 0.5 ml of thrombin with 10^6 allo-ASCs (cell group) or normal saline (control group) mixed with 0.5 ml of fibrin into the largest hypoechoic defect in the common extensor tendon. Safety assessments were conducted on day 3, and at 2, 6, 12, 24, and 48 weeks post-injection. Efficacy was measured using pain visual analogue scale (VAS) at rest and during activity, Mayo elbow performance index (MEPI), grip strength, and ultrasonographic evaluations at baseline and at 6, 12, 24 and 48 weeks post-injection. Ultrasonographic findings were rated using a 5-point Likert scale. An intention-to-treat analysis with the last observation carried forward method was employed.

Results: Five patients were assigned to the cell group and five to the control group. One control group patient dropped out before the 48-week follow-up due to aggravated calcific tendinitis of the elbow. No serious adverse events were reported. Both groups showed significant improvement in pain VAS at rest and MEPI from baseline to 48 weeks. The cell group also showed significant improvement in pain VAS during activity and grip strength, while the control group did not exhibit significant changes in these measures. No statistically significant differences were observed between the groups at any follow-up point.

Conclusion: This randomized controlled double-blind trial demonstrated that intra-tendon injection of allo-ASC significantly reduced pain during activity over a one-year follow-up compared to baseline. Both allo-ASC and fibrin glue treatments improved pain at rest and function. However, no significant differences between the treatment groups were detected. Future studies with larger sample sizes and refined criteria are recommended.

Biography

Dr. Kim studied rehabilitation medicine in Jeju National University of Hospital in 2017. He then joined the military at the army forces of Chuncheon Hospital (Korean Government requires male citizens to perform compulsory military service for 3 years.) After his fellowship supervised by Professor Dr. Kim Keewon at the Seoul National University of Hospital. Professor Dr. Kim Keewon has published more than 50 research articles in SCI(E) journals.)

Sabin Sathyananadan
TATA Memorial Centre, India

Role of nanoparticulated delivery of Mesenchymal stem cells in sexual function of adult Rabbit and Adult dog : a DMED knock out experiment model in Erectile Dysfunction

Title: Perivenular intracavernosal Mesenchymal stem cell (MSC) Isolation and storage from Corpora cavernosum and corpora spongiosum in adult male rabbit and adult dog and production of clonal MSC nanoparticulated delivery for penile condition which caused ED (Erectile dysfunction) in subject male rabbit and dog and check for the erection function in these male Dog and Rabbit.

AIM: To prove the association of whether clonal MSC produced in GMP grade facility has role in ED treatment has value in regenerative medicine practice in Animals and thereby in humans.

Methodology: Taking 20 dogs and Rabbit as control and 20 as subjects (Dogs/ rabbit) DMED (Stretozocin induced diabetic ED) Male Dogs and Male Rabbits, they are subjected to clonal delivery of nanoparticulated MSC (Mesenchymal Stem Cells) . The ED function can be measured by intra cavernosal pressure measurement, apomorphine test, dynamic infusion caversometry, isometric tension study. The to be Stored MSC can be isolated and expanded in culture medium . After extraction these MSC cells are expanded to estimate the cytokine and biological response modifier functions and see for cytokine levels and regeneration mechanisms.

Discussion: The nanoparticulated Intracavernosal delivery of MSC can be used if proven superior and can be a potential treatment modality form DMED dogs and Rabbit Model.

Conclusion of the Hypothesis: The perivenular MSC taken from potent male Rabbits and Dogs might be able to change the ED status , once proven histologically the treatment could have a potential impact on the treatment of Human Male ED.

Biography

Dr Sabin Sathyanandan is a Homi Bhabha National Institute, Tata Memorial Centre, International Atomic Energy Agency, Graduate now working as consultant in transfusion medicine services in Sagar Multispecialty Hospital in rural service in lower middle income country, India-south east asia.

Yongchun Cui
Fuwai Hospital, China

Single-cell transcriptomic atlas identifies cell types associated with vascular remodeling after small- diameter artificial vascular grafts implantation

Objective: Clinically, there is an urgent need for small-diameter artificial vascular grafts (SDAVGs) meeting the requirements of rapid endothelialization and thrombotic resistance, and poor vascular remodeling is one of the bottlenecks affecting the clinical transformation of SDAVGs. This study aims to design and fabricate a three-layer biomimetic SDAVG,and utilize single cell RNA-sequencing to explore the mechanism of the vascular remodeling after SDAVG implantation.

Methods: To ensure the safety of the novel three-layer biomimetic SDAVGs in vivo, we evaluated their biocompatibility and hemocompatibility firstly. Then, a porcine carotid artery replacement model was established to analyze the biological performance of the three-layer biomimetic small-diameter artificial vascular graft, and histopathological analysis of tissue sections of vascular grafts was performed by HE and immunohistochemical staining. Additionally, single cell transcriptome sequencing was used to investigate the cell composition and changes after blood vessel implantation.

Results: In all in vitro experiments, the small-diameter artificial blood vessel exhibited excellent biocompatibility and hemocompatibility. Furthermore, in vivo transplantation experiments demonstrated favorable anti-thrombotic properties and minimal intimal hyperplasia. And the small-diameter artificial blood caused no evident inflammatory reaction in tissue in vivo implantation experiments. What's more, single-cell RNA sequencing revealed that endothelial cells (ECs), vascular smooth cells (SMCs), and myeloid cells were the main cell type in the small-diameter artificial blood, and endothelial-to-mesenchymal transition (EndMT) occurred. RNA velocity showed that ECs subtype transitions from quiescent to proliferating phenotype (Figure 1).

Conclusion: The biomimetic small-diameter artificial blood vessel has potential clinical application prospects, and the results of single-cell RNA sequencing provide support for its optimization and clinical translation.

Biography

Yongchun Cui, Female, Professor, Master's Supervisor in Fuwai Hospital, State Key Laboratory of Cardiovascular Disease, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing 102300, China.

O'Neal Youté
University Military Health Research Center, Cameroon

Surface decontamination effectiveness at the "Université des Montagnes" Teaching Hospital: Monitoring in the biomedical analysis laboratory

Background: Many infections in healthcare facilities are associated with the microbiological quality of the work environment, generally due to poor sanitation.

Aim: In order to evaluate the effectiveness of a decontamination protocol (cleaning + disinfection) applied at the "Université des Montagnes" Teaching Hospital, the present study assessed the variation of bacterial loads on surfaces subsequent to decontamination. Susceptibility of bacteria to disinfectants was also evaluated in the same frame.

Methodology: This work was conducted with an adjusted bacterial detection/enumeration and susceptibility test protocols and standard bacterial identification protocols. Sampling on surfaces was performed by wet swabbing before cleaning, between cleaning and disinfection and after disinfection.

Results: Major findings revealed the predominance of Staphylococcus on target surfaces (75.5%). High bacterial loads recorded on these surfaces before decontamination became undetectable after cleaning with the detergent "Pax lemon". The majority of isolates (98%) were susceptible to the disinfectants tested, (Surfanios® 0.25% and sodium hypochlorite 0.12%).

Conclusion: Overall, these findings indicated process effectiveness on the subjected bacterial populations and suggest the use of either Surfanios® (0.25%) or sodium hypochlorite (0.12%) for work surfaces hygiene, justifying the use of these products in this department for surface decontamination. Also, cleaning with the detergent "Pax lemon" and disinfection with sodium hypochlorite may be sufficient for the types of surfaces subjected in the present research.

Biography

Hospital hygiene and the means of monitoring microbial presence in the hospital environment in resource-limited settings are among her research interests. He has a Master's degree in Medical Biology, specializing in Microbiology obtained in 2020 at the Université des Montagnes, Cameroon. He is also interested in antimicrobial resistance issues in human, animal and environmental contexts

Jun Wang
University of North Carolina at Charlotte

A novel smartphone-nanosensor platform for onsite rapid detection of organophosphate pesticides in food and water

We present an integrated smartphone/resistive nanobiosensor for simple, rapid, reagentless, and sensitive detection of OP pesticides in food and environmental water. The biosensor leverages the hydrolytic activity of acetylcholinesterase (AChE) to its substrate, acetylcholine (ACh), and unique transport properties of polyaniline nanofibers (PAnNFs) of hitosan/AChE/PAnNF/carbon nanotube (CNT) nanocomposite film on a gold interdigitated electrode. A mobile app for the biosensor was developed for receiving and analyzing measurement data and displaying and sharing testing results. Under optimal conditions, the biosensor demonstrated a wide linear range (1 ppt–100 ppb) with a low detection limit (0.304 ppt) and high reproducibility (RSD <5%) for Paraoxon-Methyl (PM), a model analyte. Furthermore, the biosensor was successfully applied for analyzing PM spiked food/water samples with an average recovery rate of 98.3% and provided comparable results with liquid chromatography-mass spectrometry. As such, the mobile nanosensing platform open n new avenue for onsite rapid and sensitive monitoring of OP pesticides in food and environmental water.

Biography

Jun Wang received his Ph.D. in Analytical Chemistry from Wuhan University, China in 2000 and was subsequently awarded a scholarship from DAAD, Germany (2000-2001). Then, he pursued his postdoc research in the California State University at Los Angeles (LA) and the University of California at LA, respectively (2001-2005). He jointed Pacific Northwest National Laboratory (PNNL) as a scientist (2005-2011). After that, Dr. Wang moved to Charlotte, NC and founded a start-up company (Nanodiagnostic Technology, LLC) in 2011 and served as the president there (2011-present). Since October 2019, Dr. Wang became a Research Professor at the Department of Bioinformatics and Genomics at the University of North Carolina at Charlotte. (APS)..

Linda K. Medlin
Algae Save the World, Consulting, UK

Automated Environmental Sampler and Laboratory-on-a-Chip to Enhance Monitoring for Toxic Algae

Novel sampling and organismal detection systems have been developed to take a larger, more representative sample whose concentrate can be used for DNA/RNA extractions for species detection for better monitoring results to facilitate policy decision. An automated environmental sampler that uses kidney dialysis hollow fibre filters to concentrate all organisms from 25-50 litres into a 1 litre concentrate for downstream DNA/RNA extraction and analysis. The taking of such a large volume of water for any environmental sample provides a much broader picture of the ecosystem to be sampled/monitored. This broader picture will pick up more information on rare events and allow policy decisions to be made based on samples that are more representative of the natural environment than samples of 1 L or less that are now routinely taken by environmental scientists and monitoring agencies. From the concentrated environmental sample, RNA is extracted and used in biosensors with electrochemical detection for toxic algae. Single electrode chips are being developed into a 16-electrode laboratory-on-a-chip. Our long-term goal is to develop an early warning system for toxic algae in a miniaturised laboratory on a chip format with multiplexed electrodes with barcodes for 160 toxic algal species. The barcodes in a single electrode format show a high signal and no cross reactivity when challenged with non-target RNA. Plans are to combine the environmental sampler and the laboratory on a chip into one instrument that will afford real-time monitoring of the environment. We seek collaborations to develop the laboratory on a chip with 144 multiplexed electrodes.

Biography

Professor Linda K. Medlin is currently a Research Fellow at the MBA and CEO Of Algae Save the World, Consulting. Worked previously as Head of Research at Microbia Environnement, France, at the Observatoire Oceanologique of UPMC, France and at the AWI, Germany. Received Ph.D. from Texas A&M University in 1983 in marine botany. Expert in marine phytoplankton evolution/phylogenetics. Published 287 papers, 37 books chapters, two edited books and two special issues, one manual for microarray analysis, 98 invited lectures, of which three are keynote speakers and four are plenary speakers. Awarded 52 research grants of which 19 are EU. 3X winner of the Tyge Christensen award for best paper in Phycologia and 1X winner of the Provasoli award for best paper in Journal of Phycology. Elected foreign member of Norwegian Academy of Science for her pioneering work in phytoplankton phylogenetics. Her 1988 benchmark publication for first PCR primers for 18S gene opened the door for rRNA genes as biodiversity genes. 2022 recipient of the Yasumoto Lifetime Achievement Award given by the International Society for the study of Harmful Algae for her lifetime work on developing phylochips/microarrays/biosensors for early warning systems for toxic algae and freshwater pathogens and for analyzing marine biodiversity. Inventor on three patents for the detection of toxic algae.

COGNITION CONFERENCES

INNOVATION AT SCIENTIFIC GATHERINGS