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Precision Global Conferences

Cell & Gene Therapy World Conference
CGTWC 2025

Cancer R&D World Conference
CRDWC 2025

Joint Event On

CELL & GENE THERAPY WORLD CONFERENCE & CANCER R&D WORLD CONFERENCE

10-12 September 2025

Venue

Crowne Plaza Boston-Woburn
15 Middlesex Canal Park
Woburn, MA 01801, USA

CRDWC & CGTWC 2025

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ABOUT US

Precision Global Conferences

Precision Global Conferences is a highly established scientific conference organizer. We take high integrity in conveying your achievements to the world and emphasize your incredible work and scientific contribution. Precision global conferences have developed the progression, broadcast, persistence, research, and development activities in cancer, neurology, and nursing science.

We support the beacon of quality research works and efforts of academicians, researchers, scientists, doctors, and all the future young experts to confide their outstanding works fearlessly. Our primary goal is to make health care accessible and understandable to people. We are ecstatic to pass on the ray of research, developments, and cutting-edge therapies worldwide. Hence, we are here to organize and conduct highly esteemed conferences.

This conference will emphasize the outstanding works and their medicinal consequences through hybrid presentations. If you're searching for a perfect podium that can reflect your professional ethics and voice your appointment, we are here with the best team, welcoming your honorable presence.

SILVER SPONSOR

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Company Information:

The Sartorius Life Science Research portfolio delivers products and services to support researchers in academia, biotechnology and the pharmaceutical industry. From discovery, to process development, to clinical and commercial manufacturing, our portfolio of proven solutions helps you achieve faster time-to-market while saving costs. Advanced cell models - such as organoids, spheroids and 2D stem cell-based models - are revolutionizing biomedical research and drug discovery. However, they come with several challenges: Reproducibility, standardization, complexity, cost, scaling up, etc. Sartorius addresses these challenges and more with cutting-edge analytical solutions that streamline advanced cell model R&D workflows and provide translational insights that translate into clinical outcomes for patients in need. Together, we're setting the standard in cell and gene therapy.

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Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

KEYNOTE SESSIONS | DAY 1

A. Thomas Look*[1] and Nina Weichert-Leahey[2]

[1]Department of Pediatric Oncology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, Massachusetts, USA.

[2]Division of Pediatric Hematology/Oncology, Boston Children's Hospital, Boston, Massachusetts, USA.

KAT6A/B Inhibition Synergizes with Retinoic Acid and Enhances the Efficacy of Gd2-Targeted Immunotherapy in Neuroblastoma

High-risk neuroblastoma accounts for about 15% of childhood cancer deaths and arises from precursors of the peripheral sympathetic nervous system. Retinoids are clinically used to inhibit growth of neuroblastoma cells through reconfiguration of the regulatory enhancer landscape. Its effects, however, are completely reversible after drug withdrawal, leading to rapid tumor cell proliferation. Here, we sought to identify epigenetic modifiers that potentiate the antiproliferative effects of retinoids in neuroblastoma. We identified PF-9363, an inhibitor of the H3K23 acetyltransferases KAT6A/B,as synergistically inhibiting neuroblastoma growth in combination with retinoids. PF-9363 plus retinoids induces durable growth arrest, which persists beyond retinoid withdrawal *in vitro* and *in vivo* with sustained Polycomb-mediated repression of oncogenic transcription factors MYCN, PHOX2B and GATA3. Moreover, PF-9363 plus retinoids increases GD2 expression, rendering neuroblastoma cells more sensitive to anti-GD2 immunotherapy. Overall, our studies demonstrate that KAT6A/B inhibition increases the effectiveness of retinoids and GD2-targeted immunotherapy in neuroblastoma.

Biography:

A. Thomas Look, M.D., is a Professor of Pediatrics at Harvard Medical School and a member of the Department of Pediatric Oncology at the Dana-Farber Cancer Institute. Look received his M.D. degree and postgraduate training in Pediatrics from the University of Michigan and his fellowship training in Pediatric Oncology at St. Jude Children's Research Hospital, where he advanced over twenty years to become Chair of the Experimental Oncology Department and Professor of Pediatrics at the University of Tennessee College of Medicine. He moved from St. Jude Children's Research Hospital to Dana-Farber Cancer Institute and Harvard Medical School in 1999 specifically to establish a research program in the zebrafish as a model of human cancer.

Guobao Chen

AbbVie Cambridge Research Centre, USA.

Emerging Novel Technologies to Enable In Vivo Cell Engineering as an Alternative to Traditional Cell Therapies

Cell therapies including stem cell therapies and engineered cell therapies are widely accepted nowadays, especially the autologous CAR T cell therapies with multiple FDA approval in the past decade. However, the ex vivo engineered cell therapies, including autologous and allogenic CAR T cell therapies face multiple challenges in manufacturing, logistics and patient accessibilities. With the emerging novel technologies on in vivo delivery systems, now in vivo cell engineering is no longer a science fiction, and is happening in real life. This provides an alternative solution for patients who are not able to receive proper treatment due to the hurdles of ex vivo cell therapies. The field is rapidly evolving and a few in vivo CAR T cell therapies are already in the clinic. Although the clinical efficacy is yet to be determined, it is shining light from the end of the tunnel for patients, who are desperately waiting for curative therapies.

Biography:

Guobao Chen is a Principal Research Scientist from AbbVie Cambridge Research Centre. He is the group leader of 5 Senior Scientists who are working on novel delivery modalities to achieve in vivo cell engineering to bring cures to autoimmune disease patients.

Andras Szasz

Department of Biotechnics, Hungarian University of Agriculture and Life Sciences, Hungary.

Tumor-Specific Immune Activation by Electro-hyperthermia

Introduction – Modulated electro-hyperthermia (mEHT), harnesses nonionizing electric fields and applies it in oncological hyperthermia. Unlike traditional hyperthermia techniques, mEHT merges the nonthermal impact with its thermal effect. It has limitless combinations with conventional therapies like chemotherapy and radiotherapy .
Method – Modulated electro-hyperthermia (mEHT) targets membrane rafts of the malignant cells [ ]. The precise targeting is based on the living objects' thermal and electric heterogeneity, selecting the cancer cells' peculiarities compared to their healthy counterpart []. The chosen 13.56 MHz carrier signal is a safe medical standard and optimal for selection mechanisms, while the applied amplitude modulation is in the low-frequency range, promoting the polarization and excitation effects of the transmembrane proteins. The technical realization is a high preciosity impedance matched resonant circuit following any real-time target changes. The patient is a discrete resonant circuit part.

Results – The heterogenic energy absorption of mEHT forces antitumor effects by inducing the exhaustion of heat-shock proteins (HSPs) in the cells. These HSPs, when released extracellularly, along with other members of the damage-associated molecular pattern (DAMP) allow for antigen-presenting for tumor-specific T CD8+ cells, thereby enhancing the immune response against the tumor. Preclinical studies in vivo proved the selection and verified the development of DAMP, and the immunogenic processes. The clinical studies validate the method. A Phase III study showed a significant elongation of the survival time of patients with advanced cervix cancer, with abscopal effect and improved quality of life. Numerous Phase II clinical trials show the efficacy of mEHT with significant improvements for pancreas, glioblastoma, and lung cancer. Other studies and case reports support the success of complementary applications with immune checkpoint inhibitors and supportive therapy.

Conclusion – The potential of the mEHT process to broaden the effect of local treatment to become systemic immunogenic. This unique feature of mEHT, which could lead to significant advancements in oncotherapies, makes it a promising avenue for further exploration.

Biography:

Professor András Szász is a biophysicist. His research interests are in the bioelectrodynamics applications of fractal physiology and biocomplexity. He was teaching for 50+ years in numerous universities, currently retired. His extensive scientific work is evidenced by more than 200 scientific publications, including articles, conference proceedings, and eight books. Professor Szász is the leading developer of “oncothermia” (modulated electrohyperthermia, mEHT), an innovative oncology therapy. Recognizing the application possibilities, he founded a university spin-off company in Hungary in 1988, which later became Oncotherm Ltd., and was engaged in the design and production of mEHT devices. To further strengthen this technology, he also founded the German company Oncotherm GmbH for marketing purposes. The mEHT method has achieved significant global spread, currently approved and used in more than 30 countries, providing 500,000+ treatments annually. Professor Szász is the Chief Scientific Officer of the Oncotherm Group (www.oncotherm.com), overseeing research and development for both the Hungarian and German organizations.

Thomas J. Webster

School of Health Sciences and Biomedical Engineering, Hebei University of Technology, Tianjin, China; Division of Pre-college and Undergraduate Studies, Brown University, Providence, RI USA; School of Engineering, Saveetha University, Chennai, India

Nanomaterials Controlling Cell and Genetic Responses: 30,000 Patients with Improved Health and Still Counting

Nanomedicine is the use of nanomaterials to improve disease prevention, detection, and treatment which has resulted in hundreds of FDA approved medical products. While nanomedicine has been around for several decades, new technological advances are pushing its boundaries. For example, this presentation will present an over 25year journey of commercializing nano implants now in over 30,000 patients to date which have improved cell functions leading to increased bone formation and inhibited infection. Specifically, these novel nanomaterials have shown no signs of failure. Current orthopedic materials face a failure rate of 5 – 10% and sometimes as high as 60% for bone cancer patients. Further, Artificial Intelligence (AI) has revolutionized numerous industries to date. However, its use in nanomedicine has remained few and far between. One area that AI has significantly improved nanomedicine is through implantable sensors which control cell functions and genetic therapy. This talk will present research in which implantable sensors, using AI, can learn from a patient's immune system to develop improved materials for cell and gene therapy. Such implantable sensors not only incorporate AI, but also communicate to a handheld device, and can reverse AI predicted adverse events. Examples will be given in which AI implantable sensors have been used to improve human health. Importantly, this talk will cover human clinical studies on nanomaterials.

Biography:

Thomas J. Webster's (H index: 132) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995; USA) and in biomedical engineering from RPI (Ph.D., 2000; USA). He has formed over a dozen companies who have numerous FDA approved medical products currently improving human health in over 30,000 patients. His technology is also being used in commercial products to improve sustainability and renewable energy. He is currently helping those companies and serves as a professor at Brown University, Saveetha University, Hebei University of Technology, UFPI, and others. Dr. Webster has numerous awards including: 2020, World Top 2% Scientist by Citations (PLOS); 2020, SCOPUS Highly Cited Research (Top 1% Materials Science and Mixed Fields); 2021, Clarivate Top 0.1% Most Influential Researchers (Pharmacology and Toxicology); 2022, Best Materials Science Scientist by Citations (Research.com); and is a fellow of over 8 societies. Prof. Webster is a former President of the U.S. Society for Biomaterials and has over 1,350 publications to his credit with over 55,000 citations. He was recently nominated for the Nobel Prize in Chemistry. Prof. Webster also recently formed a fund to support Nigerian student research opportunities in the U.S.

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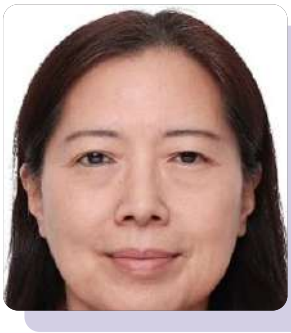
ORAL | DAY 1



Hongyun Tai*[1], Xi Wang[1], Zhonglei He[1], Liang Yao[2], Wenxin Wang[2]

[1]Branca Bunús Ltd, Pioneer Life Sciences Cherrywood Business Park, Ireland.

[2]Charles Institute of Dermatology, University College Dublin, Ireland.

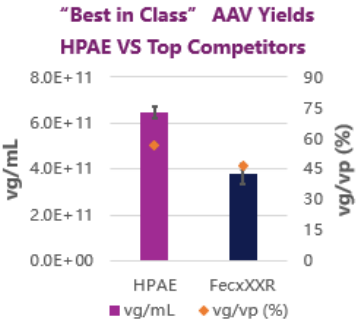
Biodegradable Hyperbranched Poly (β-Amino Ester) Transfection Platform Improves Viral Vector Yield and Efficiency

Conventional viral vector production methods have long relied on cationic liposomes or polyethyleneimine (PEI) as transfection agents. However, these approaches suffer from inherent drawbacks, including suboptimal transfection efficiency, high cytotoxicity, and challenging scalability. This study presents a novel non-viral gene delivery platform based on hyperbranched poly(β-amino ester) (HPAE). The HPAE exhibits diversified structures, enriched functional end-groups, and enhanced transfection efficiency compared to linear poly(β-amino ester), thereby offering a promising alternative to conventional transfection methods.

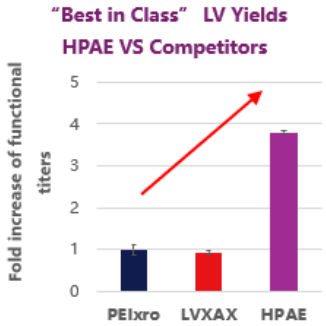
HPAE-based transfection reagents demonstrate several key advantages over conventional PEI or liposome-based systems. They can efficiently transfect large plasmids (>12 kb) with high potency while maintaining minimal cytotoxicity. For example, a ~15 kb plasmid encoding a therapeutic gene was delivered with robust expression, and transfected cells retained >90% viability. Importantly, HPAE polymers achieve high transfection efficiency across a wide range of mammalian cell types, including mesenchymal stem cells and neural cells that are typically difficult to transfect with PEI. The polymer's full degradability ensures no persistent residual material, allowing cells to recover rapidly after transfection. The HPAE–DNA complexes remain stable for at least 3 hours at room temperature, enabling flexible handling and straightforward scale-up. This stability facilitates complex multi-plasmid transfection protocols (such as the three-plasmid system for adeno-associated virus (AAV) production) without compromising efficiency. Furthermore, the platform is highly cost-effective, requiring less than 25% of the reagent amount used in typical PEI protocols. Despite using only one-quarter the polymer dose, it achieves equal or greater gene expression and viral yields. The polymer also provides a consistent molecular weight distribution and transfection efficacy suitable for Good Manufacturing Practice (GMP)-compliant viral vector production.

In head-to-head comparisons, the HPAE platform delivered significantly higher titres of AAV and lentivirus (LV) with superior batch-to-batch consistency relative to leading commercial transfection reagents: in AAV production tests HPAE generated approximately 50% higher infectious titres than PEI, and lentiviral vector yields were approximately 2.5-4 folds. Beyond viral vectors, the HPAE system

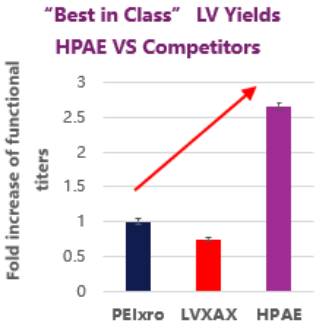
also enables efficient delivery of other nucleic acids and ribonucleoproteins, including mRNA, siRNA, and CRISPR-Cas9 RNP complexes. This broad versatility positions HPAE-based delivery technology as a comprehensive solution with significant potential to advance gene and cell therapy research and development.



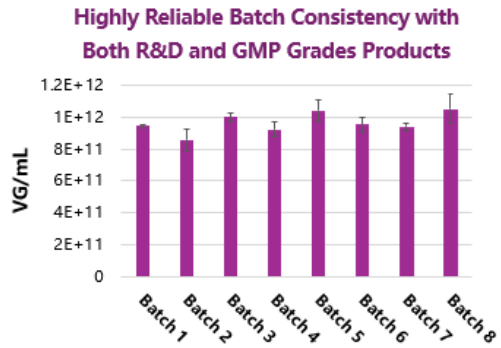
rAAV-6-X, Suspension HEK293F cells, Harvested 2 days post-transfection



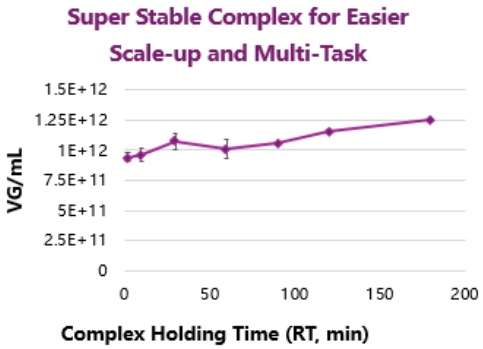
LV-X1, Suspension HEK293F cells, Harvested 2 days post-transfection



LV-X2, Adherent HEK293T cells, Harvested 2 days post-transfection



rAAV-5-GFP, Suspension HEK293F cells, Harvested 3 days post-transfection



rAAV-5-GFP, Suspension HEK293F cells, Harvested 3 days post-transfection

Biography:

Dr. Hongyun Tai, PhD, MBA CEO and co-founder of Branca Bunús Ltd. Dr. Hongyun Tai, with a PhD in Polymer Chemistry from the University of Nottingham and an MBA from Bangor University in UK, is an experienced entrepreneur and academic with over 20 years of expertise in biomaterials, gene therapy, and biotechnological innovations. As the CEO and co-founder of Branca Bunús Ltd. Since 2019, a pioneering biotech company specializing in non-viral gene therapy for rare genetic diseases like Epidermolysis Bullosa (EB) and the development of high-performance gene transfection reagents, Dr. Tai has been at the forefront of advancing novel therapeutic solutions for gene therapy and drug delivery systems.

Company logo and short introduction

Branca Bunús Ltd is a pioneering gene therapy start-up and a leading biotechnology company, committed to developing and commercializing polymer-based gene therapies for patients with genetic disorders worldwide. Its mission is to transform innovative scientific discoveries into life-changing clinical treatments and become leaders in non-viral gene therapy solutions for debilitating genetic conditions. Branca Bunús Ltd is also specializing in the development and commercialization of high-efficiency transfection reagents, driven by our proprietary “HPAE” technology for both research and industrial applications. It aims to provide cutting-edge solutions that enhance the production of recombinant proteins and viral vectors, making transfection more accessible, cost-effective, and advantageous over traditional methods like PEI or lipid-based reagents.

Silvia Fenoglio*[1], James Tepper[1], Lauren Grove[1], Esther CH Uijttewaal[2], Alborz Bejnood[1], Yi Yu[1], Hsin-Jung Wu[1], Annabel Devault[1], Shangtao Liu[1], Binzhang Shen[1], Samuel R Meier[1], Ashley H Choi[1], Tenzing Khendu[1], Hannah Stowe[1], Minjie Zhang[1], Brian B Haines[1], Alan Huang[1], Jannik N Andersen[1], Xuewen Pan[1], Teng Teng[1], Ulrich Elling[2]

[1] Tango Therapeutics, Boston, USA.

[2] IMBA, Vienna, AUT, Austria.

Empowering Large-Scale Screening in Complex Model Systems with CRISPR StAR

CRISPR-based genome editing has revolutionized drug discovery by uncovering new therapeutic targets. At Tango Therapeutics, we leverage CRISPR-Cas9 to identify synthetic lethal interactions tied to tumor suppressor gene loss, focusing our screenings on advanced human cancer models both in vitro and in vivo.

While large-scale CRISPR screens have successfully been conducted in vitro, expanding this approach to in vivo models presents significant challenges. Issues such as poor sgRNA library representation, low signal-to-noise resolution, inefficient engraftment of transplanted cells, and uneven clonal expansion due to tumor microenvironment heterogeneity all limit the effectiveness of in vivo CRISPR screens. As a result, many of these screens lack the statistical power needed for reliable results, often leading to false positives or negatives, or requiring an excessive number of animals to compensate.

To address these limitations, we applied a cutting-edge CRISPR-based platform called CRISPR-StAR (Stochastic Activation by Recombination)—licensed from IMBA, Vienna—tailored for in vivo screening in CDX models. CRISPR-StAR overcomes traditional hurdles by creating matched pairs of gene knockouts and internal controls within established tumors. This inducible system ensures that screened phenotypes are linked to tumor growth and maintenance rather than tumor formation, making the findings more clinically relevant. Additionally, by capturing each tumor clone's history through internal controls, CRISPR-StAR significantly reduces noise, enabling more precise data extraction.

Our computational analysis has demonstrated that CRISPR-StAR can achieve a resolution of 1,000 sgRNAs per tumor—reducing animal requirements by 5- to 7-fold compared to conventional methods. Beyond in vivo gene dependency screening, CRISPR-StAR holds promise for tackling other challenging CRISPR screening environments, such as 3D cultures and metastatic models, where non-uniform growth and survival conditions typically introduce high levels of noise. In summary, CRISPR-StAR is paving the

way for more efficient, scalable, and clinically relevant in vivo CRISPR screening—bringing us closer to discovering targeted therapies for some of the most complex cancers.

Biography:

Silvia Fenoglio is a principal scientist in functional genomics at Tango Therapeutics, focusing on target identification and validation. Tango Therapeutics is a biotechnology company dedicated to discovering novel drug targets and delivering the next generation of precision medicine for the treatment of cancer. Using an approach that starts and ends with patients, Tango leverages the genetic principle of synthetic lethality to discover and develop therapies that take aim at critical targets in cancer. This includes expanding the universe of precision oncology targets into novel areas such as tumor suppressor gene loss and their contribution to the ability of cancer cells to evade immune cell killing. Silvia Fenoglio completed a PhD in genetics at Cold Spring Harbor Laboratory working on in vivo high throughput shRNA screening in syngeneic models and hit validation. Throughout her career, her interests always orbited around functional genomics applications in oncology preclinical models.

Yu-Te Liu[1]*, Chao-Hsiang Hsiao[1], Bor-Show Tzang[1,2,3,4], and Tsai-Ching Hsu[1,2,4]
1Institute of Medicine, Chung Shan Medical University, Taichung, Taiwan, Republic of China.
2Clinical Laboratory, Chung Shan Medical University Hospital, Taichung, Taiwan, Republic of China.
3Department of Biochemistry, School of Medicine, Chung Shan Medical University, Taichung, Taiwan, Republic of China.
4Immunology Research Center, Chung Shan Medical, China.

In Vitro And In Vivo Effects of a Traditional Chinese Medicine (TCM) In Human Breast Cancer Cells

Background: Breast cancer is the leading cause of cancer-related death in women worldwide. Although traditional Chinese medicine (TCM) is commonly used by patients with breast cancer, little is known about TCM prescriptions for breast cancer. This study investigated the effects of a new TCM formula, T33, comprising Radix Kansui, Rheum rhabarbarum, Paeonia lactiflora, Jiangbanxia, and Zhigancao on breast cancer cells in vitro and in vivo.

Methods: To evaluate the effects of T33 on human breast cancer, HMEpiC, MDA-MB231 and MCF-7 cells were treated with different concentrations of T33 and then analyzed using MTT and Transwell migration assays. To elucidate the involvement of autophagy in the T33-induced death of MDA-MB231 and MCF-7 cells, immunofluorescence staining with LC3-II-specific antibodies was performed. Tumor xenografts were generated by subcutaneously injecting either MDA-MB231 or MCF-7 cells into BALB/c nude mice to determine the effects of T33 on these cell lines in vivo.
Results: The experimental results revealed that 0.1 mg/mL, 0.5 mg/mL, 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33 significantly inhibited the proliferation and invasion of MDA-MB231 and MCF-7 cells. Moreover, significant autophagy was observed in MDA-MB231 and MCF-7 cells in the presence of 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33. An animal study further revealed that both low (200 mg/kg) and high (600 mg/kg) doses of T33 inhibited the proliferation of xenografted breast cancer cells in BALB/c nude mice.
Conclusion: These findings demonstrate for the first time that T33 has potential in the treatment of breast cancer owing to its antiproliferative effects and induction of autophagy.

Biography:

He is working as a Chief Attending Doctor of De-Yi Chinese Medical Clinical, Changhua, Taiwan, R.O.C and Medical Doctor of Institute of Medicine, Chung Shan Medical University, Taichung, Taiwan, R.O.C. 2008-2014 he worked Attending Doctor in Chinese Medical Apartment, Changhua Christian Hospital, Changhua, Taiwan, R.O.C. 2009-2011 he completed Master degree of School of Chinese Medicine, China Medical University, Taichung, R.O.C.

Sharmistha Dey*[1], Abhinay Kumar Singh[1], Atul Batra[2]
[1]Department of Biophysics, India.
[2]Department of Medical Oncology, India.
All India Institute of Medical Sciences, New Delhi, India.

Early Detection of Metastatic Breast Cancer

Early detection of metastatic breast cancer (MBC) is the serious issue to healthcare system. It is essential to develop potential non-invasive, low-cost molecular biomarkers. The present study explored specific serum proteins of inflammatory, MAPK and cytoskeletal signaling pathways, involved in progression of MBC to establish panel of blood based diagnostic and prognostic biomarker. Healthy-control (HC), non-metastatic (NM) and metastatic (M) (pre and post-therapy) breast cancer (BC) patients were recruited. LOX5, Rac1, Rac1b, p38α, phospho- p38α(Y182), LIMK1, phospho-LIMK1(T508), cofilin1 and phospho-cofilin1(S3) were quantified in the serum of study group by real time label free surface plasmon resonance technology and verified by western blot. Proteins were found to be significantly elevated in serum of BC patients compared to HC and also higher in M compared to NM which further downregulated in post-therapy M patients. Elevation of phospho-LIMK1 and phospho-cofilin1 which are
critical for M were also indicated in the serum level and can differentiate from NM. Receiver operating characteristics (ROC) derived area under curve (AUC) (0.9) is very strong to differentiate between HC and BC. The panel of inflammatory cytoskeleton signaling regime proteins specified in this study can have significant clinical utility for diagnosis as well as prognosis of MBC at early stage. The study may have a high translational value in simple and cost-effective way by avoiding frequent CT/PET scans.

Biography:

Dr. Sharmistha Dey, Professor, Department of Biophysics, All India Institute of Medical Sciences, New Delhi, India. She is a basic science researcher in the field of Medicine with specialization in Biophysics and focus on protein biology, for more than last 30 years. Her area of research on proteins and peptides of biological significance can be grouped under three broad headings: bio-markers of neurodegenerative diseases, bio-markers of cancer, bio-markers of ageing and age related diseases; and plant proteins with therapeutic utility. She has more than 150 publications on various aspects of her research work in reputed and high impact journals. Her research contribution was recognized by Indian Council of Medical Research in 2016 with Prof SM Marwah Award for excellence in the field of ageing research. Her research papers have been repeatedly awarded AIIMS Excellence Research Award which was instituted in 2012, 2014, 2015, 2016, 2017, 2018. She has been awarded two international fellowships from Department of Biotechnology and Indian Council of Medical Research. She got first prize in AIIMS Oncology Research in 2019.

George Chimowa*, and Tlotlo Cassandra Setlhare
Senior Lecturer and ARISE Fellow-Botswana International University of Science and Technology, Botswana.

Nanotechnology for the Diagnosis of Lung Cancer through Exhaled Breath

Lung cancer remains the leading cause of cancer-related mortality worldwide, primarily due to late-stage detection. Current diagnostic methods are often invasive, costly, and contribute to delayed diagnoses. Exhaled human breath presents a promising, non-invasive, and rapid alternative for early lung cancer detection, as it contains volatile organic compounds (VOCs), some of which serve as potential biomarkers for the disease. Despite their sensitivity and quick response, existing polymer- and metal oxide-based sensors face critical challenges, including high power consumption and poor selectivity. To address these limitations, this study proposes the development of a cost-effective, non-invasive sensor array utilizing carbon-based nanomaterials. Using gas chromatography-mass spectrometry (GC-MS) combined with solid- phase microextraction (SPME), eleven VOCs have been identified as potential lung cancer biomarkers, with four selected to train the sensor array. The proposed design leverages the large surface area of nanomaterials to enhance selectivity and allows for operation at room temperature—ideal for real-world breath analysis. By overcoming the constraints of existing technologies, this sensor array offers a promising step toward establishing a new standard for lung cancer diagnostics through breath-based analysis.

Biography:

Dr George Chimowa is Senior Lecturer and an ARISE Fellow at the Botswana International University of Science and Technology, leading a young group of researchers that are exploring the possibility of diagnosing Lung Cancer and Tuberculosis using human breath. Prior to that, Dr Chimowa, worked at the CNRS in Toulouse, France, as well as at CSIR in Pretoria, South Africa as a Post-doctoral fellow. Dr Chimowa has vast experience in the electrical properties of carbon-based Nanomaterials, from DC transport to high frequency AC transport. His major research focus now is on exploiting the unique quantum properties of Nanomaterials for disease diagnosis. Dr Chimowa studied at the University of Witwatersrand where he did his MSc and PhD in Physics. He has published some fascinating work in Sensors and Actuators, Physical Review B, Applied Physics Letters and Nature, Scientific reports, just to name a few


Wendan Zhang[1]*, Yiming Guo2*, Wei Shang[1]

[1] Faculty of Pediatrics, the Seventh Medical Center of Chinese PLA General Hospital, Faculty of Pediatrics, Chinese PLA General Hospital, National Engineering Laboratory for Birth defects prevention and control of key technology, Beijing Key Laboratory of Pediatric Organ Failure, Beijing, China.

[2]Yikon Genomics, China.

YSD Ameliorates Diminished Ovarian Reserve by Promoting SIRT1-Mediated Mitochondrial Biosynthesis

Infertility is a global health problem affecting millions of people of reproductive age worldwide. Current data suggest that 48 million couples and 186 million people suffer from infertility, making it the third most common disease in the world after cancer and cardiovascular disease. Decreased ovarian reserve (DOR) is the main feature of infertility. Therefore, it is very important to improve the decline of ovarian reserve in the treatment of infertility. In this study, we initially used Yisheng decoction (YSD) in the clinical setting to treat patients with refractory poor ovarian reserve. The results showed that the clinical pregnancy rate was 78.9%. Twelve-month-old mice were used as the model of low ovarian reserve. The occurrence of low ovarian reserve and the treatment effect were evaluated by detecting ovarian tissue sections, electron microscopic ultrastructural indexes, serum hormone levels, and follicle counts in the control group, model group, and low -, medium -, and high-dose gavage groups. A combination of metabolomics and lipidomics was used to identify the main pathways regulated by ESD. Subsequently, the expression of mitochondrial related indicators was detected at the gene and protein levels, and further verified at the cellular level by RT-qPCR, Western blot and fluorescent staining to clarify the potential mechanism of YSD in regulating low ovarian reserve. Based on the above experimental results, it was confirmed that YSD ameliorated ovarian reserve by regulating the SIRT1-mediated mitochondrial biosynthesis pathway. This study, driven by clinical need and premised on increased conception rates in patients with DOR, pioneered an innovative treatment model for such patients. Juxtaposed with certain sophisticated assisted reproductive technologies, TCM therapies may offer cost-reducing benefits. This approach not only provides an economically feasible treatment option for patients with DOR, but also promotes the development of integrated traditional Chinese and western medicine for DOR.

Biography:

During his post-doctoral period, Zhang Wendan mainly focused on ovarian insufficiency. Starting from the synergistic effect of integrated traditional Chinese and western medicine, he studied the combination of traditional Chinese medicine and western medicine to improve ovarian insufficiency by regulating mitochondria, and found that the treatment strategy of integrated traditional Chinese and western medicine had significant advantages in improving ovarian reserve function and increasing pregnancy rate. In the past five years, Comrade Zhang Wendan has made a series of important achievements in scientific research, and published many SCI papers, among which there were 4 papers with IF >10.Details of presenting author to be mentioned in certificate:

Biography:
Yiming Guo is a skilled professional with a B.S. in Biological Science from the University of Pittsburgh. They have extensive experience as a laboratory assistant and research volunteer, including roles at the Sixth Medical Center of PLA General Hospital and Siddique Laboratory at Northwestern University. Yiming specializes in laboratory techniques such as PCR, DNA extraction, and gel electrophoresis, and has contributed to multiple scientific publications on topics ranging from fertility treatments to genomic analysis. Their meticulous approach and strong communication skills make them a valuable asset in the field of biological sciences.

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POSTER | DAY 1

Frank Liu
Safety Product Services LLC, Pittsfield, USA.

Environmental Risk Assessment of Gene Therapies: The Current Science And Practice

As a fast-growing emerging technique, gene therapy has shown great potential to treat genetic diseases and cancer. Environmental risk assessment (ERA) is a critical component of regulatory submission for marketing and clinical trial approval of drug products per the current global regulation. ERA is as important as patient safety assessment as an integral part of overall gene therapy safety. An ERA assesses the risks of gene therapy to human health and environment upon its administration. Compared with non-gene therapy, an ERA of gene therapy represents a significant technical and practical challenge as drug developers must perform a robust scientific assessment to ensure the safety of unintended persons, animals, plants, microorganisms. and environment at large. Global regulatory requirements on gene therapy ERA are diverse resulting in global approval of gene therapy challenging. Given its complexity and multifaceted nature spanning both human and environmental safety, it is critical for drug developers and safety community to understand the current landscape of global regulatory and scientific requirements on gene therapy ERA. The current requirement on gene therapy ERA in major markets including the EU, USA, and Japan is reviewed focusing on the frameworks, contents, and critical safety aspects based on the author's work experience. The major finding in the current literature is that the critical aspects of global regulatory requirements are common despite the diverse global regulations. The overall environmental risk is determined based on the "triad"- the consequence of adverse effects, the magnitude of the consequence, and likelihood of the adverse effects to occur. The critical safety aspects of ERA include virus-related shedding, insertional mutagenesis, germline transmission, viral vector replication, residual vector particles, and immunogenicity. Safety data from nonclinical studies including pharmacology, pharmacokinetics, and toxicology must be incorporated. An experienced toxicologist with both human and environmental safety knowledge should perform ERA to ensure its quality and patient and environmental safety associated with gene therapy.

Biography:

Frank Liu, PhD, is a seasoned human and environmental toxicologist in the field of pharmaceutical and cosmetic products. He received his BSc and master's degree in aquatic toxicology from Huazhong Agriculture University (China) and a PhD in environmental toxicology from Texas Tech University. He published extensively in various topics in relation to human health and environmental safety (both GMO and non-GMO drug products). His expertise in environmental risk assessment (ERA) of gene therapies has been built upon significant hands-on experience of preparing multiple gene therapy ERA reports to support global registration of gene therapy products (US FDA and EMA) and shown in a recent critical review entitled "The science and practice of current environmental risk assessment for gene therapy: a review." Cytotherapy, 2024, 26(7):686-699.

Ashley Banas*, Maeve Smith, Eva Browne, Amy Burnside, Sallie Schneider, and Kathleen Arcaro

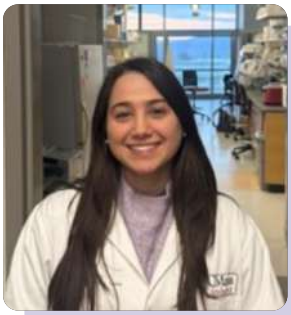
Department of Veterinary and Animal Science – Animal Biotechnology and Biomedical Science, University of Massachusetts Amherst, USA.

Does Chronic Inflammation Alter DNA Methylation in Breast Epithelial Cells

Breast cancer, the second most common cancer among U.S. women, primarily arises in breast epithelial cells. Genetic and epigenetic factors contribute to the development of cancer, with BRCA mutations significantly increasing risk. DNA methylation, an epigenetic mechanism, regulates breast cancer associated genes expression, and aberrant methylation is linked to aging, chronic inflammation, and mutations. Chronic inflammation plays a crucial role in cancer development and is possibly present, often unnoticed, in up to 15% of lactating women. Chronic inflammation can alter DNA methylation patterns and can affect tumor suppressor/promoter gene expression. Investigating factors that trigger early aberrant DNA methylation, specifically chronic inflammation (that is usually associated with increased levels of cytokines), could lead to prevention of these aberrant patterns. My research examines the extent that chronic inflammation alters DNA methylation in breast cells. Specifically, I assess if prolonged exposure to physiologically relevant cytokine levels, mimicking chronic inflammation, alters DNA methylation in human breast epithelial cells in a pattern associated with increased risk of breast cancer. To test this, I exposed two immortalized human mammary epithelial cell lines, MCF-10A and BRCA1-mutated MCF-10A, to a cytokine cocktail for 30-weeks. Significant alterations in DNA methylation associated with increased risk were observed after treatment.

Biography:

Ashley Banas is a third year PhD graduate student in the Animal Biotechnology and Biomedical Science program at UMass Amherst. Ashley graduated magna cum laude in May 2022 with a Bachelor of Science degree in Medical Microbiology from the University of New Hampshire. Ashley has a passion for the biomedical sciences and is currently investigating how chronic inflammation affects DNA methylation (overall and site specific) in relation to breast cancer in Dr. Arcaro's research laboratory. Ashley is enthusiastic about helping others learn and understand the biomedical sciences, with a main interest in cell culture and microbiology. Ashley has shared her content knowledge with peers as a graduate teaching assistant in Dr. Arcaro's veterinary oncology laboratory. Ashley is deeply committed to advising and inspiring curiosity in the five undergraduate students she is mentoring. She eagerly guides them through an exciting parallel research project, investigating whether chronic inflammation alters DNA methylation patterns using a different cell culture model. Through her mentorship, she hopes to empower her students to develop critical research skills, fostering their growth as future scientists. In her free time, Ashley enjoys snowboarding, painting, arts and crafts, gardening, spending time with her family and her cat Nala.



Aliyah Dalier*, Molly Hoffenberg, Brian Pentecost, Kathleen Arcaro
University of Massachusetts Amherst, USA.

Genome Wide DNA Methylation as a Biomarker for Individual Breast Cancer Risk

Breast cancer is the second leading cause of cancer death in women. New approaches for early detection and individual assessment of modifiable risk factors are needed to reduce breast cancer-associated deaths. Aberrant DNA methylation of breast tissue is a feature of all breast cancers and occurs years to decades before cancer is detected, potentially providing both accurate risk assessment and early detection. Importantly, DNA methylation is reversible with diet and drugs, representing a truly modifiable risk factor. However, assessment of DNA methylation requires breast tissue. Human milk contains sloughed epithelial cells originating throughout the mammary gland. Here, we present proof of principle for human milk as a liquid biopsy. I focused on *BRCA* mutation carriers as their risk of cancer is extremely high and currently many women with pathogenic germline *BRCA* mutations choose to have a bilateral risk-reducing mastectomy, though not all will develop breast cancer. Comparison of genome-wide DNA methylation in bilateral milk samples collected from healthy *BRCA* mutation carriers and those who developed breast cancer reveals a methylation-risk profile detectable in milk. Given that 84% of women give birth and produce milk, results from this study have broad applications for accurate risk assessment and cancer prevention.

Biography:

Aliyah Dalier is a PhD student in the Molecular and Cellular Biology Program at the University of Massachusetts Amherst. In the Arcaro lab, her research focuses on using genome-wide DNA methylation as a biomarker for breast cancer risk, specifically in high-risk individuals. Since not all high-risk individuals will develop breast cancer, her work aims to identify personalized risk factors based on an individual's epigenome. She uses breastmilk as a non-invasive liquid biopsy, isolating DNA from bilateral breastmilk samples from high-risk participants with a pathogenic germline BRCA mutation and performing DNA methylation to predict breast cancer risk in these populations.

Po-Jen Shih*, Yen-Chen Lin, and Wei-Qi Liao
Department of Biomedical Engineering, National Taiwan University, Taiwan.

Pneumatically Induced Cyclic Stretch Enhances Corneal Stromal Cell Alignment and Accelerates Wound Healing

Corneal injuries disrupt the organized alignment of stromal cells, which is essential for maintaining corneal transparency and visual acuity. This misalignment during the healing process often leads to optical aberrations and long-term vision impairment. Given the global shortage of donor corneas and the limited reliability of artificial corneas and ex vivo cell culture systems, there is a critical need to better understand the mechanical factors that influence corneal repair. In this study, we developed a novel pneumatic tension stretching system designed to simulate the physiological intraocular pressure fluctuations and biomechanical environment of the cornea. The system applies cyclic mechanical stretch to a compliant polyacrylamide hydrogel substrate, which has been tuned to replicate the stiffness of native corneal tissue. Corneal stromal cells were cultured on this substrate and subjected to cyclic mechanical stimulation over defined time intervals. Compared to static culture conditions, dynamic stretching significantly enhanced both stromal cell proliferation and alignment along the direction of applied tension. Immunofluorescence imaging revealed improved expression of cytoskeletal and differentiation markers, suggesting that mechanical cues promote a more physiologically relevant cellular phenotype. To further investigate the role of mechanical forces in wound healing, we introduced micro-scale square wounds using a precision laser ablation technique within the cell monolayer. Time-lapse observations demonstrated that under cyclic stretching, wounds elongated into elliptical shapes within 20 hours and showed near-complete closure by 40 hours. In contrast, wounds under static conditions healed more slowly and retained irregular geometries. Interestingly, the directionality of wound orientation relative to the applied stretch played a critical role in healing outcomes. Wounds aligned parallel to the direction of cyclic tension exhibited faster and more organized closure under dynamic conditions, while vertically oriented wounds showed better repair in static environments. These findings suggest that mechanical anisotropy modulates cellular migration and matrix remodelling during regeneration. In conclusion, this study highlights the importance of biomechanical cues in corneal stromal cell behaviour and wound repair. Our pneumatic cyclic stretching platform provides a promising tool for modelling corneal biomechanics in vitro and could inform future strategies for enhancing corneal regeneration and designing biomimetic therapies.

Biography:

Dr. Shih is an Associate Professor in the Department of Biomedical Engineering at National Taiwan University. He specialized in mechanics and wave dynamics. With prior experience as a structural engineer and faculty member at National University of Kaohsiung, his research now bridges classical mechanics with medical applications. His expertise includes corneal biomechanics, sensor design, and the development of ophthalmic medical devices. Recent work focuses on vibration and wave-based diagnostics, covering areas such as corneal disorders, vocal fold dynamics, and blood pressure waveforms.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

KEYNOTE SESSIONS 01 | DAY 2

Tiziana Parisi

CEO, CSO, and Co-founder of Paralog Therapeutics Inc. USA.

Exploiting Evolution to Target Cancer

Despite the considerable advances achieved in identifying tumor-driving mutations, the full potential of precision medicine is far from being unleashed. Existing cancer drugs allow gene function to be blocked and therefore almost exclusively target oncogenes. Opportunistic use of synthetic lethality, however, holds the prospects of expanding the realm of candidate genes to include tumor suppressors and even passenger mutations. Synthetic lethality occurs when co-inactivation of two genes leads to cell or organismal death, while deregulation of either gene alone is compatible with viability. The use of PARP inhibitors in *BRAC1*- or *BRAC2*-deficient tumors provides an exemplary application of this phenomenon in cancer therapy. As synthetic lethal genes often have similar functions, a rich source for them can be found in genes originating from duplication of a common ancestral sequence, called paralogs. Indeed, RNAi and CRISPR single or combined screens have confirmed this assumption and greatly facilitated the identification of paralogs that, when targeted as pairs, hinder cancer cell growth. As an added benefit, these tools can also be applied to find vulnerabilities associated with non-driver or passenger cancer mutations. These can occur in paralogs that undergo deletion as a collateral effect of tumor suppressor inactivation.

In summary, synthetic/paralog lethality gives us the unique opportunity to bypass the biggest impediment to targeting tumor suppressors and/or gene inactivation encountered so far: the absence of a gene product. Not surprisingly, however, this strategy also comes with challenges. Synthetic vulnerability is often context-dependent, and finding the right models and/or tools to unveil it is not straightforward. As a corollary, identifying synthetic lethal genes can be daunting even when the search is restricted to paralogs, and could result in false positives and/or negatives. Furthermore, similarities between paralogs can render targeting a single gene in the pair difficult, leading to simultaneous protein inactivation and consequent cell and/or organismal toxicity.

This talk will illustrate where the field of synthetic/paralog lethality stands and discuss the advantages and drawbacks of this approach.

Biography:

Tiziana Parisi is the CEO, CSO and co-founder of Paralog Therapeutics Inc., a precision medicine company focused on the development of anti-cancer therapies. Dr. Parisi has longstanding interests in modeling and targeting signaling pathways that control tumorigenesis and disease. Throughout her career in academia, biotech, and their interface, Dr. Parisi has uncovered a variety of previously unappreciated gene functions in cancer, disease, immunity, development, stemness, and transcription. Prior to joining Paralog Therapeutics Inc., Dr. Parisi conducted research at the Massachusetts Institute of Technology. At MIT, Dr. Parisi generated and studied a multitude of mouse models of cancer and disease. Moreover, in the last six years, Dr. Parisi initiated a multidisciplinary collaboration between MIT and Johnson & Johnson, aimed at detecting and intercepting lung cancer at its early stages. Dr. Parisi performed part of her postdoctoral studies at the DNAX Research Institute (Schering Plough, Palo Alto, CA), where she focused on genes that control stemness, cell proliferation, and cancer. Dr. Parisi holds a Ph.D. from the University of Naples Federico II in Italy, where she studied the function and regulation of tumor suppressor genes and contributed to elucidating the structure and function of endogenous retroviruses in humans and primates. Dr. Parisi strives to enrich the scientific environment by serving as a reviewer, mentor and collaborator in diverse settings.

Sanjeev Saxena* VinitSaxena, RogerAlsop, ReinhardKupferschmidt

Sepragen Corp., Union City, California, USA

Transforming Gene Therapy Manufacturing: Advancements in Scalable, Efficient Viral Vector Purification

Gene therapy holds the potential to revolutionize the treatment of a wide range of diseases, but scalable and cost-effective manufacturing remains a significant challenge. In this keynote, I will explore how innovative chromatography technologies—specifically Radial Flow Chromatography and Sepragen's QuantaSep DSP system—are transforming viral vector purification to support the rapid growth of gene therapy.

The QuantaSep DSP integrates buffer blending and chromatography in a single system, dramatically reducing the need for buffer preparation, saving both time and costs, and reducing space requirements. This system is designed to enhance scalability and throughput, allowing manufacturers to meet the increasing demand for viral vectors in a more efficient, cost-effective manner.

Through the use of Radial Flow Columns, the system provides faster flow rates and higher capacity, improving the overall productivity and consistency of viral vector purification.

These advancements make the technology ideal for both clinical-scale development and commercial manufacturing, supporting gene therapy companies in their journey from development to clinical application.

The presentation will highlight the impact of these technologies on AAV and lentivirus production, showcasing real-world examples of how they streamline process development, reduce contamination risks, and ensure compliance with cGMP standards. Additionally, I will discuss the broader implications of these innovations in advancing the field of gene therapy and accelerating the delivery of life-saving treatments.

Biography

Sanjeev Saxena is the VP of Sales and Marketing at Sepragen Corp, specializing in innovative chromatography technologies. He is also the founder of Actis Biologics, an early gene therapy company focused on lentiviral vectors as a delivery platform and ribozyme technology. Additionally, Sanjeev founded POC Medical Systems, a company in the medical diagnostics field. With over two decades of experience in biotechnology, Sanjeev has led multiple successful ventures, focusing on advancing gene therapy, viral vector purification, and continuous biomanufacturing. His work emphasizes sustainability, efficiency, and cutting-edge technologies

Thomas J. Webster

School of Health Sciences and Biomedical Engineering, Hebei University of Technology, China.

30,000 Nanotextured Implants in Human: No Cancer, No Infection, Only Success

Polymers have been widely used and investigated as drug carriers for treating cancer. While such polymers can be biodegradable, cytocompatible, functionalized to attach to certain cells and tissues, and have controllable drug (chemotherapeutic) release properties, can't we do better ? Can't we design polymers that both deliver drugs and fight the disease their embedded drugs were design to do ? Yes, we can and we have. This presentation will review novel polymeric systems that can delivery drugs for fighting cancer, inhibiting infection, promoting tissue growth, reversing immune disorders and more. But more importantly, it will also show how such polymers themselves can be formulated to kill cancer cells and bacteria, promote tissue forming cell functions, and inhibit immune cells. Novel polymer functionalization strategies with nanometer geometries will be presented that can accomplish both of these important features for fighting diseases. This talk will cover how we have developed nanotextured implants now in over 30,000 patients with no cancer, no infection, no failure, only success. In this manner, this study introduces that polymers can not only deliver drugs to fight numerous diseases, but the polymers themselves can be formulated to treat diseases as well.

Biography:

Thomas J. Webster's (H index: 129) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995; USA) and in biomedical engineering from RPI (Ph.D., 2000; USA). He has formed over a dozen companies who have numerous FDA approved medical products currently improving human health in over 30,000 patients. His technology is also being used in commercial products to improve sustainability and renewable energy. He is currently helping those companies and serves as a professor at Brown University, Saveetha University, Hebei University of Technology, UFPI, and others. Dr. Webster has numerous awards including: 2020, World Top 2% Scientist by Citations (PLOS); 2020, SCOPUS Highly Cited Research (Top 1% Materials Science and Mixed Fields); 2021, Clarivate Top 0.1% Most Influential Researchers (Pharmacology and Toxicology); 2022, Best Materials Science Scientist by Citations (Research.com); and is a fellow of over 8 societies. Prof. Webster is a former President of the U.S. Society for Biomaterials and has over 1,350 publications to his credit with over 55,000 citations. He was recently nominated for the Nobel Prize in Chemistry. Prof. Webster also recently formed a fund tosupport Nigerianstudent research opportunities in the U.S.

Jessicca Rege*, Kyle M. Schachtschneider, Vera Mehta, and Lawrence B. Schook

Chief Executive Officer, Sus Clinicals, USA.

Moving Beyond the Mouse Models for Cancer Research: Oncopig An Inducible Transgenic Large Animal Cancer Model

Cancer rates continue to rise, and treatments become more and more challenging due to resistance mechanisms, undefined targets driving disease and overall lack of clinically relevant systems in which to study the effects of interventions, multimodal modalities, and therapeutics. To address this challenge, Sus Clincials developed an inducible transgenic Oncopig®, a unique genotypically, anatomically, metabolically, and physiologically relevant large animal model that develops inducible site and cell specific tumors for preclinical study of human cancer. The Oncopig® harbors mutations found in the majority of human cancers- $KRAS^{G12D}$ and $TP53^{R167H}$- and results in tumors that mimics the human physiology of cancer. The Oncopig® is a more relevant model than the mouse for various reasons, but importantly the size allows utilization of the same interventional tools, such as radiological, imaging and surgical devices all employed in human clinical practice, therefore allowing to understand all aspects of safety, efficacy and metabolim in one model system. The Oncopig® is also an ideal model for investigation but additionally, we have demonstrated the ability to genetically engineer Oncopig® cell lines to facilitate the controlled addition of gene mutations in induced tumors, or add additional comorbities within animal for improved preclinical investigation of the impact of cancer subtypes and defined special populations on diagnostic and therapeutic approaches. Oncopig® Cancer Model is the only FDA cleared large animal cancer model, that supports device, drug and diagnostic safety, risk and efficacy studies within one animal to help to better facilitate researchers to bring their most promising interventions into the clinic.

Biography:

Dr. Jessicca Rege is current the CEO of Sus Clinicals a biotech company that specializes in developing large animal pig based preclinical models which have the ability to accelerate development of life-saving cancer therapeutics. Dr. Rege also serves as the Chief Medical Officer of Oncoscope- AI, a company that is utilizing AI to build up to date peer reviewed evidence from intervention studies to help aid in medical decisions for patients. Pharmaceutical executive with extensive experience in Research and Development and Global Medical affairs from pre-IND to Phase IV/compound commercialization of small molecules, cytotoxics and biologics in oncology, has been leading oncology organizations for the past 20 years.

Sophie Gorengaut*

Super NOVA Clinical Research, Inc. USA.

Choosing, Managing, and Overseeing Imaging Vendors in Oncology Trials: What Works, What Fails, and How to Gain a Competitive Edge

Imaging is not just another data point in oncology trials—it's often the most critical determinant of whether a patient progresses, a therapy moves forward, or a program succeeds. Yet, despite its importance, imaging remains one of the most under-planned and operationally fragile elements in cancer trials. Why? Because the stakes are high and the processes are complex, selecting the wrong imaging partner—or failing to oversee them properly—can cost sponsors both time and credibility.

This presentation offers more than a checklist—it provides a strategic roadmap. Suppose you're a biotech sponsor, CRO, clinical operations lead, or vendor oversight professional involved in imaging-intensive oncology trials. In that case, this session is designed to help you protect your trial's integrity while unlocking operational efficiency and regulatory confidence.

We'll start by breaking down what truly matters when choosing an imaging vendor. Beyond the glossy proposal decks and pitch slides, what should you actually be looking for? You'll learn how to evaluate vendor capabilities with a critical eye—focusing on therapeutic alignment, expertise in tumor-specific imaging, their ability to handle optimized evaluation criteria beyond RECIST/iRECIST, quality control protocols, and global site support infrastructure. We'll also share tips on how to stress-test a vendor's ability to flex with trial demands—especially in adaptive, basket, and expansion-cohort studies.

However, vendor selection is only the beginning. The real value is created—or lost—during execution. We'll explore proven oversight models that bridge the gap between imaging teams and clinical operations, including how to establish a performance framework that aligns with trial objectives and ensures data quality at every stage. You'll learn how to structure KPIs and SLAs that reflect the actual pain points of imaging in oncology—like minimizing image transfer delays, improving protocol compliance at the site level, and optimizing read turnaround for timely database locks and interim analyses.

Drawing from real-world examples and lessons learned from global oncology trials, we'll examine how early missteps in imaging planning often lead to protocol amendments, missed milestones, and regulatory headaches—and how you can proactively avoid them. We'll also walk through communication strategies that foster collaboration rather than confusion across vendors, CROs, and internal teams.

Importantly, we'll also cover what regulators expect when it comes to imaging documentation and validation—especially as imaging becomes more central to primary and surrogate endpoints. From protocol language to imaging charter details and independent reads, you'll leave with a clear understanding of how to "audit-proof" your imaging strategy.

Ultimately, this session is about risk reduction, value creation, and speed. By taking a strategic, hands-on approach to imaging vendor selection and management, you can increase the likelihood of trial success—without sacrificing quality or adding unnecessary complexity.

Whether you're planning your next oncology program or mid-flight in an ongoing study, this session will leave you better equipped to make confident decisions about your imaging partnerships and avoid the avoidable.

Key Takeaways:

How to evaluate and select the right imaging partner for your oncology trial

Common execution pitfalls and how to proactively prevent them

Performance metrics that actually matter for imaging oversight

Regulatory insights for imaging strategy documentation

Practical tools for aligning vendors, CROs, and sponsor teams for success

Biography:
Sophie Gorengaut is a clinical operations and imaging strategy expert with more than 20 years of experience in oncology drug development. She has led global trials across solid tumors and hematologic cancers, focusing on complex imaging endpoints. Sophie has worked closely with imaging vendors, CROs, and site teams globally, helping to design and run trials that meet regulatory standards without losing sight of operational realities. Her approach blends scientific rigor with a strong dose of practical execution, making her a trusted voice in the field.

Qian PENG

Oslo University Hospital, Oslo, Norway.

Modification of Extracorporeal Photopheresis with 5-Aminolevulinic Acid

Extracorporeal photopheresis (ECP), a modality that exposes isolated white blood cells to photoactivatable 8-methoxypsoralen and UVA light ex vivo followed by returning the treated leukocytes to the body, is used for the treatment of cutaneous T cell lymphoma, graft versus host disease and some other T-cell-mediated diseases. However, the disadvantages of this therapy include the destruction of both diseased and normal T cells with little selectivity, and clinically, long-lasting, expensive and only partial response in the majority of treated patients. Furthermore, the mechanism of action is not fully understood, so that it makes difficult to broaden application to additional types of T-cell-mediated diseases. Selective, short duration, cheap and more effective alternatives are thus needed. Our previous studies over a 40-year period have established a broad biological basis for introducing a novel concept of ECP technology with the potent photosensitizer protoporphyrin IX derived from its precursor, 5-aminolevulinic acid (ALA) (Gliolan, photonamic, GmbH & Co. KG, Germany). The use of ALA for ECP may cause selective and effective immunogenic cell death of proliferative malignant or activated T-cells without compromising functions of the normal T-cells to induce systemic anti-disease immunity. The results of our preclinical and clinical studies will be presented.

Biography:

Dr. Qian Peng is the group leader of photodynamic therapy and photodetection in the Department of Pathology, Oslo University Hospital, Oslo, Norway. His group has recently been developing a novel version of extracorporeal photopheresis technology using 5-aminolevulinic acid, a precursor to the potent photosensitiser protoporphyrin IX in the heme biosynthesis pathway.

Thomas An

Department of Radiology, Massachusetts General Hospital, Boston, MA, USA

Thermal Ablation and Immunotherapy: Potential for Synergy

Thermal ablation (e.g. cryoablation, microwave ablation, radiofrequency ablation) is widely used for treatment of malignancy in multiple organ systems. Notably, there are case reports which have demonstrated decrease in size of distant lesions after thermal ablation of a solitary site. These findings have raised the possibility of potential immunologic effects of thermal ablation. In addition, clinical studies have been initiated to assess how thermal ablation may improve outcomes when combined with systemic immunotherapy. This presentation will review current clinical research aimed at studying the potential synergy of combined thermal ablation and immunotherapy.

Biography:

Thomas An, MD is an interventional radiologist at Massachusetts General Hospital. His clinical interests include portal venous interventions, transplant interventions, and interventional oncology. He attended Princeton University for his undergraduate studies and Vanderbilt University for medical school. He completed an integrated interventional and diagnostic radiology residency at Massachusetts General Hospital/Harvard Medical School before joining the Interventional Radiology faculty at Massachusetts General Hospital.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

ORAL SESSION 01 | DAY 2

Samarah Arjumand* and Faruque Azam
School of Pharmacy, BRAC University, Dhaka, Bangladesh.

Broadening the Horizon of Therapeutic Possibilities with CAR-T Cell Therapy: A Versatile Tool Relevant Beyond Cancer, Convention and Personalization

Chimeric Antigen Receptor -T (CAR-T) cell therapy, originally developed to precisely target malignant cells, has rapidly evolved into one of the most versatile tools in modern medicine. Although all of the seven approved products to date have been indicated for the treatment of cancer, particularly for haematological malignancies, the underlying principle is now being adapted to address an expanding array of diseases. This includes autoimmune conditions such as Systemic Lupus Erythematosus (SLE), neurodegenerative diseases such as Amyotrophic Lateral Sclerosis (ALS), viral infections such as Sars-CoV-2 and so on, all of which have shown positive outcomes in preclinical models through targeted CAR-T therapies [1,2,3].

Additionally, the CAR construct itself, is undergoing continuous improvements, with sophisticated engineering allowing for multivalent targeting. These next-generation CAR structures such as SynNotch CARs, Universal CARs, Inhibitory and programmable Logic-Gated CARs exhibit groundbreaking modifications to the conventional CAR designs [4,5,6,7]. These advancements are successfully addressing major challenges such as on-target-off-tumor toxicity, T-cell exhaustion and immune evasion, which are particularly promising for targeting solid tumors with immunosuppressive microenvironments. Moreover, in addition to the T cell-based therapy, the same CAR approach is being extended to develop CAR-NK and CAR-Macrophage cells, leveraging the unique capabilities of said immune components and a dual targeting CAR-NK cell therapy has already reached its first human administration [8,9].

Furthermore, as the field progresses, there is a concentrated effort to transition towards allogenic, off-the-shelf product development from the highly patient-specific autologous approach to make this therapy scalable, widely accessible and thus considerably affordable. In preclinical trials, promising results have been seen with CAR-MAIT cells against B-cell lymphoma and breast cancer models [10]. Additionally, the first Phase-I clinical trial using allogenic anti-CD19 CAR-T cells (TyU19) has been conducted for R/R SLE, demonstrating its potential for broader clinical application [1].

This poster explores the expanding applications and ongoing innovative advancement in the CAR-T cell therapy field, establishing itself as a revolutionary and multi-faceted tool, for not only cancer treatment but also a diverse range of diseases.

Biography:

Samarah Arjumand is a recent Bachelor of Pharmacy graduate from the School of Pharmacy, BRAC University, Bangladesh. Her strong interest lies in Immunotherapy and the development of next-generation biologics, with a particular focus on T cell-based therapies. For her undergraduate thesis, she conducted an extensive review on CAR-T cell therapy and its application in cancer treatment. She is also the first author of a mini-review article on CAR-T cell therapy, recently been accepted for publication in a Q2 journal. This is her first international conference and she is very excited to present her work at the 2025 Cell and Gene Therapy World Conference.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

KEYNOTE SESSIONS 01 | DAY 3

Yan Xiaojun

CytoNiche Biotech Pte. Ltd.

Revolutionizing Large-Scale MSC Manufacturing: 3D FloTrix Technology with Dissolvable Microcarriers and Automation for the Future of Cell Therapy

CytoNiche has developed 3D RecomTrix recombinant collagen dissolvable microcarriers for large-scale manufacturing of adherent cells, critical for allogeneic cell therapies like Mesenchymal Stromal Cells (MSCs) and cell-free therapies like exosomes. The 3D FloTrix Technology integrates these microcarriers into automated, closed single use bioreactors and cell processing systems to address scalability and purification challenges in cell therapy production. Over 100 billion MSCs could be produced in a single batch with 3D RecomTrix recombinant collagen microcarriers using serum-free xeno-free cell culture medium in a three-stage scale up to 4 × 50L single-use bioreactors. Cells could be washed, concentrated, and formulated with 3D FloTrix vivaPREP ULTRA and automatically filled and finished. 3D FloTrix Technology has powered the first approved MSC drug in China in achieving industrial-scale cell yields with a 3-stage process, compacted facility footprint (<100 m^2), and 80% reduction in workforce. CytoNiche aims to advance cell therapy manufacturing by offering a scalable, cost-effective solution that improves product quality and accessibility, benefiting sectors from regenerative medicine to vaccine production. This technology addresses critical bottlenecks in adherent cell processing, positioning it as a versatile tool for sustainable biopharmaceutical innovation.

Biography:

Dr. Yan Xiaojun is the CTO of CytoNiche and the principal inventor of the 3D FloTrix™ technology. With over 10 years of experience in 3D cell culture and drug screening, she has published 22 SCI papers and filed 79 patents (62 in China, 17 internationally), with 57 patents granted and 3 software copyrights.

Hiroshi Kobayashi

Professor Emeritus Graduate School of Pharmaceutical Sciences, Chiba University, Japan.

Novel Drug Development for Cancer Treatment in Acidified Nests

Many trials to measure the pH of tumor tissues over the past 80 years have shown that solid cancer nests are generally acidified. However, until recently, few trials have been conducted to measure the efficacy of ani-cancer drugs under acidic conditions. It is erroneously accepted that the pH of cytosolic spaces is kept at pH around 7.4 even if the external space is acidified. This is one of reasons why anti-cancer drugs specific to acidified cancer nests have not been focused. We first measured the cytosolic pH of cancer cells growing in acidic medium and found that the cytosolic pH decreases as the acidification of the growth medium. This suggests that some enzymes are working preferentially at internal acidic pH. Using DNA array techniques, we found that approximately 700 genes among 24,000 genes tested are expressed at a higher level in mesothelioma cells growing in acidic medium. Anti-cancer drugs targeting the enzymes whose expression increases in acidic cancer nests would be effective in cancer treatment with fewer adverse effects on normal cells in the normal tissues whose pH is slightly alkaline around 7.4.

To confirm this idea, we established the in vitro assay system for screening anti-cancer drugs working in acidic nests, and approximately 300 compounds were examined using various cancer cell lines. Among them, four compounds, lovastatin, cantharidin, manumycin A, and ionomycin, were found to have higher anti-cancer activity at acidic pH compared with pH 7.4. Interestingly, many anti-cancer drugs we are now using showed less efficacy at acidic pH.

Among the four compounds, we have focused on statins, and found that statins inhibit cancer cell proliferation through the suppression of the RAP1 prenylation but not the inhibition of cholesterol synthesis at acidic pH.

There are still debates whether statins have anti-cancer activity or not. We found that the effect of statins is conditional, they are effective at acidic conditions but not at pH around 7.4. Therefore, acidity of cancer nests should be always considered when we discuss the efficacy of statins on cancer treatment, especially in a mouse model.

In addition to the above drugs, we found many drugs whose efficacy is shown to elevate at acidic pH.

We also found that the TCR signaling is affected by external acidity, and acidification of cancer nests should be kept in mind for development of anti-cancer immunotherapy as well.

Biography:

I completed my doctoral program at the University of Tokyo in 1974 and received PhD in 1974 in Biochemistry from the University of Tokyo. After postdoctoral training at Colorado University Medical Center, I started studies on adaptation strategies of microorganisms to acidic environments at Chiba University as an associate professor in 1978. I studied genetics at the University of Michigan School of Dentistry as a Visiting Researcher in 1985-1986. After professor position was appointed in 1996 at Faculty of Pharmaceutical Sciences, Chiba University, my research has focused on mammalian cell functions under acidic conditions and anti-cancer chemotherapy in acidified nests. I retired from Chiba University in 2012 at the age of 65 due to university regulations and am now a professor emeritus at Chiba University. I worked as an associate editor of International Immunopharmacology published by Elsevier from 2014 to 2024. My research is summarized in the book: Hiroshi Kobayashi. 2021. “Molecular Strategies of Creatures to Survive in Acidic Environments: Invitation to the Acidic World”. Cambridge Scholars Publishing. Newcastle upon Tyne. UK.

Thomas Böldicke

Structure and Function of Proteins; Helmholtz Centre for Infection Research, Germany.

The Future of Cancer Immunotherapy with Genetically Engineered T Cells and Recombinant Antibodies

Over the last two decades cancer immunotherapy has been developed with substantial success demonstrating prolonged survival of patients with rapidly fatal cancers. Recombinant antibodies and, more recently, T cell receptor (TCR) engineered T-cell therapies represent two immunological strategies that have come to the forefront of clinical interest for targeting intracellular neoantigens in benign and malignant diseases. T cell-based therapies targeting neoantigens use T cells expressing a recombinant complete TCR (TCR-T cell), a chimeric antigen receptor (CAR) with the variable domains of a neo-epitope-reactive TCR as a binding domain (TCR-CAR-T cell) or a TCR-like antibody as a binding domain (TCR-like CAR-T cell). Furthermore, synthetic T cell receptor and antigen receptor (STAR) and heterodimeric TCR-like CAR (T-CAR) are designed as a double-chain TCR$\alpha\beta$-based receptor with variable regions of immunoglobulin heavy and light chains (VH and VL) fused to TCR-Cα and TCR-Cβ, respectively, resulting in TCR signaling. In contrast to the use of recombinant T cells, anti-neopeptide MHC complex (pMHC) antibodies and intrabodies neutralizing intracellular neoantigens can be more easily applied to cancer patients. However, different limitations should be considered, such as the loss of neoantigens, the modification of antigen peptide presentation, tumor heterogenicity, and the immunosuppressive activity of the tumor environment. The simultaneous application of immune checkpoint blocking antibodies and of CRISPR/Cas9-based genome editing tools to engineer different recombinant T cells with enhanced therapeutic functions could make T cell therapies more efficient and could pave the way for its routine clinical application.

Keywords: Neoantigens; TCR-like antibodies; intrabodies; bispecific antibody (CD3 x TCR; CD3 x TCR like antibody); TCR CARs; TCR-like CARs; T CARs; STARs; therapeutic mRNA; checkpoint blocking antibodies; CRISPR/Cas9-based genome editing

Biography:

Associate Professor Dr. Thomas Böldicke received his PhD 1982 at the Max-Planck-Institut of Molecular Genetics, Berlin. He started his carrier as post doc at the German Research Centre for Biotechnology (GBF, Braunschweig, Germany) in the Department of Genetics and Cell Biology by John Collins. Now he is senior scientist at the Helmholtz Centre for Infection Research (HZI, former GBF) and project leader intrabodies. He developed recombinant antibodies against tumor antigens, particularly against tumour angiogenesis, rhabdyomyosarcoma and recently against TLR2 and TLR9 in pancreatic cancer. He edited two books: “Protein Targeting Compounds” with Springer (2016) and “Antibody Engineering” with IntechOpen (2017). He has published 25 Pubmed manuscripts. Over 10 years he gave lectures at the Technical University in Braunschweig about immunology, cancer development and immunotherapies. He is in the editorial board of the journal Antibodies as academic editor, Frontiers in Immunology and Frontiers in Oncology.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

ORAL SESSION 01 | DAY 3

Patricia Tai[1]*, Arbind Dubey[2], Rashmi Koul[3], Kelvin Wong[4], Avi Assouline[5], Kurian Joseph[6], Edward Yu[7], Aoife Jones Thachuthara[8], Evgeny Sadikov[9]

[1]Division of Oncology, U. Saskatchewan, 105 Administration Place, Canada.

[2&3]Department of Oncology, U. Manitoba, Canada.

[4]Astellas Pharma, Canada.

[5] Oncologue Radiothérapeute, Centre de Cancérologie de la Porte de Saint-Cloud (CCPSC), Président de la CME et Coordonnateur médical du CCPSC, France.

[6]Department of Radiation Oncology, Division of Oncology, Cross Center Center, Canada. [7]Department of Oncology, Western U., Canada.

[8] Department of Medical Oncology, Cork University Hospital, Cork, Ireland.

[9]Department of Radiation Oncology, U. British Columbia, Canada.

A Pioneering, First of Its Kind Canadian Off-Site Program Designed to Reduce the Burden on Hospital Staff and Optimize the Use of Space

Background: The Saskatchewan Cancer Agency serves a population of 1 million in Saskatchewan, western Canada. Many prostate cancer patients require androgen deprivation therapy (ADT), administered via injections by nurses. However, the burden on nursing staff, booking teams, and hospital space was substantial.

Monthly degarelix, a gonadotropin-releasing hormone (GnRH) antagonist used in ADT, has demonstrated superior outcomes in clinical trials compared to other hormonal therapies.

Aim/Objective

We piloted Canada's first off-site ADT injection program to decentralize services and ease congestion in acute care settings. This is the first reported Canadian community experience with ADT.

Methods

From January 2011 to April 2015, 176 consecutive patients were recommended degarelix (initial dose: 240 mg; maintenance: 80 mg). Seven refused due to drug interactions, co-morbidities, or inconvenience. The remaining 169 men were categorized as follows:

- Adjuvant therapy (ADJ): 27
- Biochemical failure (BCF) after previous curative treatment: 49
- Distant metastases (MET): 74

For those receiving radiotherapy, high doses were used (≥74 Gy/37 fractions for external beam or high-dose-rate brachytherapy of equivalent doses).

Patients on degarelix were identified via electronic pharmacy records, followed by paper chart reviews

and additional electronic data extraction. A continuously updated Excel database was maintained. The primary outcomes included patient and staff feedback as well as treatment statistics.

Results

The program led to less crowded waiting rooms every Tuesday afternoon in two central clinics. Nurses used freed-up time for other duties. Patients with mobility issues received home injections by drug company nurses (instead of privately funded nurses).

Nurses in one rural site, where multiple complaints of local reactions occurred, were retrained by drug company representatives. Oncologists received nursing reports detailing patient compliance, progress, and side effects, including local pain (13), fever/chills (8), rashes (5), hot flashes (5), local swelling (3), and pulmonary embolism (1, possibly treatment-related).

Overall, 24/133 (18%) men requested to discontinue due to local pain/swelling. However, with supportive medications such as Benadryl, acetaminophen, topical lidocaine, Emla numbing cream, and/or oral dexamethasone, only 1/22 (4.5%) stopped treatment (P=0.2, chi-square test with Yates' correction). Patients with mild reactions continued therapy after explanations highlighting degarelix's superiority over GnRH agonists, underscoring the role of effective communication in improving compliance.

At the last follow-up (median 37.7 months, range: 0.5-123.0 months), the status of 169 patients was:

- Died of disease: 52 (31%)
- Alive with disease: 64 (38%)
- No evidence of disease: 43 (25%)

Conclusion

The off-site injection program was positively received by nurses, clinic administrators, and patients. Effective communication among patients, nurses, and doctors improved compliance, tracking, and patient care. Only 1 out of 22 men discontinued treatment when supportive medications were provided. This initiative enabled collaboration between the cancer clinic and the drug company, enhancing service delivery. During this period, high-dose external beam radiotherapy (≥74 Gy/37 fractions) or high-dose-rate brachytherapy remained the standard of care, ensuring relevance to current treatment settings. The program may serve as a practice-changing model for alleviating the strain on overburdened cancer centers while significantly enhancing collaboration between industry and healthcare staff.

Biography:

Prof. Patricia Tai graduated with a gold medal from Hong Kong University (ranked 35th among the world's top 100 universities) after training under Prof. John Ho, a world leader in nasopharyngeal carcinoma. Upon immigrating to Canada, she received fellowship training under Prof. David McDonald (recognized for the landmark McDonald brain tumor criteria) and Mr. Jake Van Dyk (a world-renowned medical physicist). She is an international expert in skin cancer and has been an invited author of five UpToDate chapters since 2000. She was promoted to full professor in 2009 and became an Honorary Professor at Hong Kong University in 2016. Currently, she has 149 full publications, 121 conference abstracts, and 168 oral/poster presentations and lectures.

Vitali Kalantaryan*[1], R. Martirosyan[2] , Y.Babayan[3], A.Kalantaryan[4]

[1.]Radiophysics & Electronics, Yerevan State University, Armenia ,

[2.]National Academy of Sciences of Armenia, Yerevan, Armenia

[3.]Medical Physics, Yerevan State Medical University, Armenia ,

[4.] Private Practice, Fribourg, Switzerland

Extremely Low Power Non-Thermal Electromagnetic Radiation at Selective Frequencies Suppresses the Growth of Tumour Cells

Introduction: Unlike now widely used traditional methods of treatment of tumours by means of ionizing radiation and chemotherapy, the method of the use of extremely-low power electromagnetic fields (EMF) is non-ionizing and non-invasive and hence is completely deprived of any harmful side effects. The present study was undertaken in order to find out whether low-power EMFs can suppress the growth of tumour cells in vivo without the use of cytostatics.

Material and methods: The course of influence of EMFs started 3 days before transplantation in order to raise activity of the animals' immune system. On the fourth day, the animals (mice) were injected with sarcoma-37 and continued daily exposure for 0.5 hours for 15 days. A generator operating in the frequency range of 38.5 -53.5 GHz was used as a source of radiation. A whole-body exposure of mice to medical radiation was conducted in the far-field zone of cone-shaped antenna in the mode of continuous generation with incident power density at the location of the object about 10 μW/cm2.

Results and discussion: After a 15-day course of irradiation was observed an inhibition of tumour growth by 33.5% compared with a control group and a sharp suppression of the level of DNA-methylation in 2.1 times. The tumour DNA has the high level of methylation (4.7 mol%), which after 0.5 hour daily exposure becomes (2.2 mol%) close to the corresponding value for health DNA (1.9 mol%). The obtained results are correlated with the spectrophotometric data.

Conclusions: Microwave therapy has a number of advantages:

*The cheapness and easy to work with generators of microwave and millimeter electromagnetic radiation, that do not require large screened rooms, does not require complicated settings or alignments and their small sizes that allows their use even in small clinics or hospitals.

* The method of application non-ionizing and non-thermal Microwaves is non-invasive and can be combined with other methods of treatment: physiotherapy, medicine.

* The combined use of low-intensity millimeter radiation and anti-cancer drugs leads to a significant reduction in their doses, which reduces as the cost of treatment by expensive medications, so and reduces the likelihood of the patient intolerable side effects.

* The antitumor effect of millimeter radiation indicates the prospects for the development of millimeter-wave therapy for clinical oncology in the treatment of malignant neoplasms without damaging other tissues, without antitumor drugs and harmful ionizing radiotherapy. Based on the above, the application of non-ionizing and non-thermal medical radiation can be considered as a potentially new, promising and safe medical technology for early diagnostics and therapy in oncology. Presented preliminary results have demonstrated the potential clinical application of extremely low power EMFs for clinical oncology in the treatment of malignancies without damaging other tissues and antitumor drugs and without toxic ionizing radio therapy.

Biography:

Dr. Kalantaryan studied physics at Yerevan University, Armenia, and received his Master's degree in 1965. In 1966-1967, he was an intern in Moscow at the Institute of Radio Engineering and Electronics (IRE) of the Russian Academy of Sciences under Professor M.Jabotinsky. Then Kalantaryan entered the graduate school of Lomonosov Moscow State University and in 1974 the Academic Council of the Faculty of Physics awarded him the degree of Doctor of Philosophy in Physico-mathematical Sciences. Currently, Associate Professor V.Kalantaryan holds the position of Senior Researcher at the Institute of Physics of Yerevan State University. He has published more than 70 scientific articles in scientific journals. Full member of Bioelectromagnetics Society (BioEM) and full member of European Association for Cancer Research (EACR) .

Fatlinda Berisha*[1], Lorent Sijarina[2], Evgeny Sadikov[3], Edward Yu[4], Patricia Tai[5]

[1]Fatlinda Berisha, medical faculty, University of Pristina "Hasan Prishtina", Prishtina, Kosovo.

[2]Lorent Sijarina, medical faculty, University of Prishtina, Kosovo.

[3]Evgeny Sadikov - University of British Columbia, Vancouver, Canada.

[4]Edward Yu, Western University, London, Canada.

[5]Patricia Tai, Dept of Radiation Oncology, University of Saskatchewan, Saskatoon, SK, Canada.

Palliative Care in Modern Era

Introduction: Background: Palliative care became a recognized medical subspecialty in 2006. Since then, it has evolved into an essential part of comprehensive healthcare, particularly for individuals with serious or life-limiting illnesses. Its primary goal is to enhance quality of life by addressing physical, emotional, psychological, and spiritual needs—not only for patients but also for their families.
Methods: A literature search was conducted, focusing on palliative care in cancer patients over the past five years. Key findings are summarized in this overview.
Results: Despite its clear benefits, palliative care presents unique challenges. Communicating serious or terminal diagnoses with compassion and clarity can be emotionally taxing for clinicians. They must also navigate a wide range of emotional responses from patients and families—such as denial, anger, grief, or despair. Delays in diagnosis may add another layer of complexity, as care teams help individuals not only address the illness but also cope with the distress of lost opportunities for earlier intervention. Disputes among family members regarding the continuation of active treatment, transition to a lower level of care, resuscitation decisions, and other dynamics involving the will or estate are also common. In some cases, certain family members may refuse to allow a specific individual to visit the patient, even though the patient may be eager to say goodbye to that person.
Nevertheless, the rewards of palliative care are profound. Clinicians often find deep meaning in their work—easing pain, alleviating symptoms, and helping restore dignity during life's most vulnerable phases. Whether to provide alongside curative treatment or as end-of-life care, palliative services can offer peace of mind and an enhanced sense of control to patients.
Unfortunately, misconceptions continue to cloud public understanding of palliative care. Many people mistakenly associate it with "giving up" or impending death, particularly when first introduced by family doctors or oncologists. This stigma can delay referrals and prevent timely access to supportive services. However, an expanding body of research suggests the opposite: early integration of palliative care improves symptom control, enhances emotional well-being, and, in some studies, even extends overall survival.

Conclusion: In light of these findings, expanding access to palliative care must be seen as a public health priority. Efforts should include increasing awareness among healthcare professionals and the public, investing in specialized training, and integrating palliative approaches across all medical disciplines. Palliative care is not about surrendering to illness—it is about affirming life, relieving suffering, and ensuring dignity and comfort at every stage of the patient journey.

Biography:

Fatlinda Berisha is a medical student who will soon complete her studies in General Medicine at the University of Prishtina "Hasan Prishtina." She has a compassion for helping patients and performing research in cancer. She collaborates with seven other classmates in the cancer research team of Professor Patricia Tai in Canada who serves as a mentor for them all.

Melisa Stublla*[1], Kelvin Wong[2], Evgeny Sadikov[3], Avi Assouline[4], Jidong Lian[5], Arbind Dubey[6], Rashmi Koul[7], Patricia Tai[7]

[1] Medical faculty, University of Pristina "Hasan Prishtina", Faculty of Medicine, Prishtina, Kosovo.

[2]Astellas Pharma, Canada.

[3]Department of radiation oncology, University of British Columbia, Vancouver, Canada.

[4]Department of radiation oncology, Collège de Médecine des Hôpitaux de Paris, France.

[5]Division of Rad Onc, Trillium Health Partners, Mississauga, ON, Canada.

[6]Rashmi Koul -University of Manitoba, 675 McDermot Ave, Winnipeg, Canada.

[7]Dept of Radiation Oncology, U. Saskatchewan, Saskatoon, SK, Canada.

Prostate Specific Membrane Antigen (Psma) Positron Emission Tomography (PET) for Nodal and Distant Disease of Prostate Cancer

Background: This update explores the growing role of prostate-specific membrane antigen (PSMA) positron-emission tomography (PET) in the initial and salvage treatment of nodal and distant metastases in prostate cancer. PSMA PET has rapidly emerged as a preferred imaging modality, offering improved sensitivity and specificity over conventional imaging. However, treatment decisions following positive PSMA PET findings remain the subject of ongoing debate. Key areas of controversy include therapeutic strategy selection, timing of intervention, monitoring for disease progression, and the intensification of treatment approaches for metastatic castration-resistant prostate cancer (mCRPC).

Methods: A review of current literature and clinical trials was conducted, focusing on management strategies for nodal and distant metastases identified on PSMA PET imaging. The analysis encompasses systemic therapies, local interventions, and evolving roles of radiotherapy and immunotherapy.

Results: For nodal metastases, both metastasis-directed therapy (MDT) and systemic treatment options have been explored. Total androgen blockade—consisting of a gonadotropin-releasing hormone (GnRH) agonist or antagonist in combination with an anti-androgen—is currently recommended. GnRH antagonists—such as subcutaneous degarelix and oral relugolix—offer faster testosterone suppression, reduced risk of flare, and fewer cardiovascular complications compared to GnRH agonists. Intermittent androgen deprivation therapy (ADT) is generally discouraged in patients with nodal or distant metastases due to less favorable survival outcomes. Prostatectomy for oligometastatic cases remains investigational, with ongoing research evaluating its potential role in selected patients.

Upon progression to mCRPC, therapeutic intensification becomes essential. Options include radium-223 and lutetium-177 PSMA-targeted radioligand therapy—alongside stereotactic body radiotherapy (SBRT), chemotherapy, and immunotherapy. Notably, lutetium-177 PSMA therapy has received FDA

approval for mCRPC patients who have progressed on androgen receptor pathway inhibitors (ARPIs), marking a significant advance in targeted systemic treatment.

Triplet therapy regimens and early radiopharmaceutical interventions are increasingly considered for younger, fit patients with good performance status. Additionally, pembrolizumab (an immune checkpoint inhibitor) and poly (ADP-ribose) polymerase (PARP) inhibitors have become standard-of-care treatments for mCRPC patients harboring germline or somatic BRCA1/2 or ATM mutations. However, questions remain regarding the prognostic versus predictive value of these tumor suppressor gene alterations, and how best to incorporate genetic findings into clinical decision-making.

PSMA PET has also altered restaging paradigms, enabling earlier detection of recurrence and improved lesion localization compared to conventional computed tomography and bone scans. This enhanced sensitivity may lead to earlier intervention, although the clinical benefit of treating lesions at ultra-low PSA levels remains under investigation.

Systemic treatments for metastatic castration-resistant prostate cancer (mCRPC) include androgen deprivation therapy, androgen receptor pathway inhibitors, chemotherapy, and radiopharmaceuticals, all of which have associated toxicity. PSMA PET/CT–guided, metastasis-directed radiotherapy may offer durable disease control with low toxicity rates in patients with mCRPC who have a limited number of metastases. There are five prospective PSMA PET/CT studies (including HORRAD trial and arm H of the STAMPEDE study) for patients with mCRPC who had up to five sites of oligo-recurrent or oligo-progressive disease on PSMA PET/CT and subsequently received definitive-intent, metastasis-directed radiotherapy to all new or progressing sites with concurrent androgen deprivation therapy. PSMA PET/CT–guided, metastasis-directed radiotherapy appears to offer durable disease control with low toxicity rates for oligometastatic castration-resistant prostate cancer.

Conclusion: The integration of PSMA PET into prostate cancer care has transformed diagnostic and therapeutic pathways for patients with nodal and distant metastases. While it offers powerful insights into disease burden, the optimal management of PSMA PET–detected lesions remains a complex and evolving field. Balancing systemic and local treatments, interpreting molecular findings, and personalizing therapy based on patient-specific factors are all vital considerations.

Biography:

Dr. Melisa Stublla was a medical student from Kosovo, University of Prishtina, Faculty of Medicine and will graduate soon. Her main areas of interest include oncology, gynaecology, otorhinolaryngology, and medical research. She collaborates with her colleagues in the cancer research team of Professor Patricia Tai in Canada who serves as a mentor for them all.

Omar Alqaisi* [1], Patricia Tai [2], Kurian Joseph [3], Edward Yu [4], Michael Veness [5], Jidong Lian [6], Avi Assouline [7], Rashmi Koul [8], Arbind Dubey [8], Vimal H Prajapati [9]

[1]Faculty of nursing, Al-Zaytoonah university, Amman, Jordan.

[2]Division of Oncology, University of Saskatchewan, Saskatoon, Canada.

[3]Division of Oncology, University of Alberta; Department of Radiation Oncology, Cross Cancer Centre, Alberta, Canada.

[4]Division of Radiation Oncology, Western University, London, Canada.

[5]Department of Radiation Oncology, University of Sydney, NSW 2006, Australia.

[6]Division of Radiation Oncology, Trillium Health Partners, Mississauga, ON, Canada.

[7]Oncologue Radiothérapeute Centre Clinique de la Porte de Saint-Cloud/Americain Hospital of Paris, France.

[8]Division of Oncology, University of Manitoba, Winnipeg, MB, Canada.

[9]Division of Dermatology, University of Calgary, Calgary, AB, Canada.

Merkel Cell Carcinoma of the Limbs has Better Outcome than Truncal Lesions Management Updates from a 949 Patient Integrated International Database

Purpose: Merkel Cell carcinoma is a rare and aggressive cutaneous neoplasm. We studied the incidence, challenges in management and outcomes of lesions located in the limb from an aggregated database in order to evaluate whether the prognosis of peripheral MCC behaves similarly to rest of the body.
Methods and Materials: A 949-patient aggregated database (March 1982 - February 2015) was built from records of six cancer institutions and the literature consisting of patient characteristics, treatment details and outcomes to achieve adequate statistical power since it is a rare cancer. Equivalent doses in 2-Gy fractions (EQD2) = total dose×[(dose per fraction+α/β)/(2+α/β)], assuming α/β=10, were calculated to compare different dose-fractionations.
Results: 942/949 patients in the database have available data on original site(s), with primary in the head and neck 48.1% (453/942), limb 37.7% (355/942) and trunk 10.6% (100/942). Among those with a limb primary at presentation, 273/355 (76.9%) had clinical stage I or II, i.e. localized disease, 64/355 (18.0%) with stage III/nodal disease, 9/355 (2.5%) with stage IV/distant metastases and 8/355 (2.3%) with unknown stage. Radiotherapy (RT) techniques include: no RT in 236/355 (66.5%), primary site only in 33/355 (9.3%) with a median dose of 50 (range: 28-68.7) Gy2 or local+nodal coverage in 35/355 (9.9%) with a median dose of 50 (range: 37.3-60.0) Gy2. Among 343 patients with known outcome, local recurrence occurred in 74/343 (21.6%), nodal recurrence in 175/343 (51.0%) and distant recurrence in 108/343 (31.5%). The 5-year overall survival (OS) of the limb subgroup was 45.4%, compared with those of trunk (24.5%, P=0.005, logrank test). Corresponding 5-year cause-specific survival (CSS) was 60.0% vs 34.2% (P=0.000015). Limb lesions have better 5-year OS than head and neck (45.4% vs 35.5%,

P=0.0027) and CSS (60.0% vs 58.2%, P=0.37).
Conclusions: Before the era of immunotherapy, peripheral lesions in the limbs have better outcomes than truncal lesions. Enrolment in clinical trials of neoadjuvant and adjuvant immunotherapy may help to improve prognosis of these patients.

Biography:

Mr. Omar Al-Qaisi from Al-Zaytoonah University is a nursing expert in oncology and emergency medicine. He holds a master's degree in emergency and disaster medicine from Al-Zaytoonah University. He currently works as a part-time clinical instructor at Al-Zaytoonah University and also at the Military Oncology Center. He has experience using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the Mixed Methods Appraisal Tool (MMAT) for research. His recent research focuses on sexual healthcare, selenium, orthopedics, sleep quality, pain management and patient satisfaction in oncology patients.

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Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

KEYNOTE SESSIONS 02 | DAY 3

Guy Storme

Department Radiation Oncology, Oncologic Center UZ Brussel, Belgium.

Breast Cancer Outcome: Impact of Screening or Treatment

"Breast cancer outcome: impact of screening or treatment?"
With advances in diagnostic technologies and screening leading to progressive tumor shrinkage at diagnosis, it becomes more difficult over time to evaluate the effects of treatment on overall survival. New treatments are often authorized based on early evidence, such as tumor response; disease-free, progression-free, meta-static-free, and event-free survival; and, less frequently, based on clinical endpoints, such as overall survival or quality of life. Standard guidelines so far are not available to approve pharmaceuticals.
People without breast cancer die also from other diseases and as such relative survival (RS) seems the best to evaluate the effect of treatment. Screening started in early 80's as chemo- (8 drugs) and hormonotherapy (Nolvadex) becomes available. Between 1980 and 2000, RS increased from 75 to 90% attributed to treatment but omitted to analyse the tumor size, which decreased due to screening. Even 76 new drugs become available since 2000, we should have predicted the RS should rise up, but to our surprise the RS remain the same (+_ 1%). Does it mean that those "new" drugs are not effective? The problem is that those drugs were tested on patients younger than 65 with no co-morbidities which on it's own have a negative impact but which can be increased by the drugs. All single drugs have
some cardio-toxicity and treatment schemes consist of multiple drugs increasing it as shown by American Heart Association (AHA) identifying a strong correlation and offered a thorough analysis of the notable areas of overlap between heart disease and breast cancer. Another significant issue that tends to be overlooked despite the wide array of new medications is medicaire conciliation. Pharmacists' monitoring revealed that over half of the prohibited drugs or closely watched drugs were initially overlooked by oncologists.
Despite the RS remain flat with all new drugs, we observe nonetheless that within the same period the number of local tumors increased and the regional ones decreased!
So matter of discussion is open to look to new approaches with an open mind, since hope on genes were great to predict outcome, but after 35 years we have so far still no treatment for tackling BRCA-1 and the question remains open what will be the value of the impact of looking to more genes.

Biography:

To day Prof Em Oncology Vrije Universiteit Brussel, President Belgium Society Radiation Oncology 1994-1995, President Oncologic Center UZ Brussel, Head department Radiation Oncology, Head Labo of Experimental Oncology Vrije Universiteit Brussel, President of the Organization European Cancer Centers 1999-2000, Research Gate: 419 papers; h-index: 54, Member of multiple Scientific Organizations.

Patricia Tai[1]*, Patrick Martineau[2], Kelvin Wong[3], Evgeny Sadikov[4], Glenn Ollenberger[5], Kurian Joseph[6], Edward Yu[7], Derek Liu[8], Aoife Jones Thachuthara[9], Arbind Dubey[10] and Rashmi Koul[10]

[1]Division of Oncology, U. Saskatchewan, 105 Administration Place, Saskatoon, Canada.

[2]Department of Nuclear Medicine (Radiology), U. British Columbia, 6200 University Boulevard, Vancouver, British Columbia, V6T 1Z4, Canada.

[3]Astellas Pharma Canada. 675 Cochrane Drive, Suite 650 West Tower, Markham, Ontario L3R 0B8, Canada.

[4]Department of Radiation Oncology, U. British Columbia, 6200 University Boulevard, Vancouver, Canada.

[5]Department of Nuclear Medicine, Pasqua Hospital, Canada.

[6]Department of Radiation Oncology, Division of Oncology, Cross Center U. Alberta, Canada.

[7]Department of Oncology, Western U., 1151 Richmond Street, London, Canada.

[8]Department of Medical Physics, Division of Oncology, Cross Cancer Center; U. Alberta, Canada.

[9]Department of Medical Oncology, Cork University Hospital, Ireland.

[10]Department of Oncology, U. Manitoba, 205 Tier Building, Fort Garry Campus, Winnipeg, Canada.

Updates On Controversies Surrounding the Staging and Management of Newly Diagnosed Localized Prostate Cancer Using Prostate-Specific Membrane Antigen (Psma) Positron Emission Tomography

There are controversies surrounding indications for prostate-specific membrane antigen (PSMA) positron-emission tomography (PET) and the subsequent management of localized disease. Conventional imaging is not a necessary prerequisite to PSMA PET, which serves as an equally effective, if not more effective frontline imaging tool. However, research conducted in different countries has shown conflicting results regarding its cost-effectiveness. Following accurate staging using PSMA PET, subsequent management is discussed by our expert team in this review, which incorporates the latest updates: (1) Brief global overview: the sustainability and cost-effectiveness of routine PET, as well as the treatment sequences of neoadjuvant versus adjuvant androgen deprivation therapy with radiotherapy, require further research. (2) Gonadotropin-releasing hormone antagonists demonstrate better response rates, lower recurrence rates, and fewer complications compared to agonists. (3) The unfavorable intermediate-risk group may undergo prostatectomy or radiotherapy combined with 4–6 months of androgen deprivation therapy (ADT). Radiotherapy alone may be considered for patients with co-morbidities, Gleason score 7 (3+4), and positive biopsy cores <50%, provided an escalated radiation dose is applied. (4) Three **P**rostate **A**dvances in **C**omparative **E**vidence (PACE) studies demonstrated that stereotactic radiotherapy, greatly relying on PSMA PET, is as effective as surgery

or conventional radiotherapy. (5) Findings from clinical trials indicate that pelvic nodal radiotherapy coverage provides a survival benefit. (6) A brachytherapy boost provides better outcomes compared to external beam boost, eliminating the need for ADT in intermediate-risk cancers and reducing ADT duration to 6 months in high-risk cancers. Even short-term use (4–6 months) of gonadotropin releasing hormone agonists can lead to cardiac morbidity.

Lay Summary: Localized prostate cancer, as identified through the relatively new PSMA PET, can be managed in various ways. This review highlights significant updates on controversial issues relevant to both cancer patients and researchers.

Biography:

Prof. Patricia Tai graduated with a gold medal from Hong Kong University (ranked 35th among the world's top 100 universities) after training under Prof. John Ho, a world leader in nasopharyngeal carcinoma. Upon immigrating to Canada, she received fellowship training under Prof. David McDonald (recognized for the landmark McDonald brain tumor criteria) and Mr. Jake Van Dyk (a world-renowned medical physicist). She is an international expert in skin cancer and has been an invited author of five UpToDate chapters since 2000. She was promoted to full professor in 2009 and became an Honorary Professor at Hong Kong University in 2016. Currently, she has 149 full publications, 121 conference abstracts, and 168 oral/poster presentations and lectures.

Frederick H. Silver*

Department of Pathology and Laboratory Medicine, Robert Wood Johnson Medical School, Rutgers, the State University of New Jersey, USA.

Use of Vibrational Optical Coherence Tomography on Diagnosing and Understanding Skin Cancer

Skin cancer is a problem in the US and world-wide due to the growing numbers of patients screened and treated for basal cell carcinomas (BCCs). By 2050 the number of skin cancers predicted in the US will grow from the current number of 5M to 25M/yr. VOCT is a new optical and vibrational method to diagnose and study skin and skin cancers. It was developed and patented by Rutgers University and licensed to OptoVibronex, LLC for commercialization. It combines OCT imaging in the scanning mode with vibrational data collected in the fixed position mode giving physical data on the resonant frequency and modulus of individual skin components in the epidermis and papillary dermis. In addition, by breaking the color-coded OCT images into green, blue, and red channels it gives information that reflects the cellular and melanin aggregates, collagen, and fibrotic tissue. These images can be scanned and quantitatively analysed using the developed computer software. Results of studies on benign and cancerous lesions indicate that the presence of cellular aggregates, melanin particles, new thin blood vessels as well as the amount of fibrotic collagen can be directly related to the type of lesion. Machine learning studies indicate that quantitative pixel intensity versus depth plots can be used to predict lesion type with sensitivities between 90% and 100%. The technique is used in the clinic to generate information for the physician including simple lesion images to screen patients for potential cancers along with quantitative data that combined with dermoscopy and visual inspection can identify suspicious lesions along with their boundaries. The collection of OCT images in combination with vibrational mechanical loading at sound frequencies up to 100 Hz can be used to localize normal and cancerous cell aggregates in a matter of minutes. Comparison of histopathology of cancerous basal carcinomas and normal epithelial cells from color-coded OCT images suggests that cancerous cellular aggregates can be distinguished from normal epithelial cells visually by their resonance at different frequencies. The results of VOCT studies and histopathology on basal cell carcinomas (BCCs) suggest that the orientation of newly deposited collagen found around nodular BCCs acts as a boundary limiting the growing cancer.

It is concluded that VOCT in combination with visual inspection and dermascopy are tools that can be used together to screen suspicious lesions by physicians. VOCT can be used remotely by general practitioners to screen patients in areas where Dermatologist visits as are difficult to schedule. The results of these screening tests can be provided to Dermatologists electronically to make treatment recommendations and decisions.

Biography:

Dr. Frederick H. Silver is a Professor of Pathology and Laboratory Medicine at Robert Wood Johnson Medical School, Rutgers, the State University of New Jersey. He did his Ph.D. in Polymer Science and Engineering at M.I.T. with Dr. Ioannis Yannas, the inventor of the Integra, Dermal Regeneration Template, followed by a postdoctoral fellowship in Developmental Medicine at Mass General Hospital in Boston, MA with Dr. Robert L. Trelstad, a connective tissue pathologist. Dr. Silver has published over 250 papers and is an inventor on 22 patents. He invented vibrational optical coherence tomography (VOCT). US and European patents have been granted to Rutgers and licensed to OptoVibronex, LLC on VOCT.

Stefan Sandström

CEO, Biosector, Yokohama, Japan

Ethics of Scale: Making CGT Reliable, Repeatable, and Fair

CGT will not fulfil their social promise until it runs like an industry, not an experiment. The most ethical act we can perform as a field is a dose delivered on time, right-first-time. This keynote sets out a practical blueprint for scaling reliability and fairness into CGT operationswithout straying into pricing or regulation.

I will frame ethics through operational efficacy: cycle time, right-first-time, centre throughput, and chain-of-identity/chain-of-custody integrity. Using field-tested playbooks, I will outline how to standardise what should be identical across sites (data models, SOP packs, closed/automated steps, tech-transfer kits) and how to localise intelligently (people, site readiness, and centre workflows). We will examine hybrid networks that combine centralized facilities with point-of-care capability, and the objective thresholds at which bedside becomes the ethical and operational choice.

Applied AI is treated as a GMP-grade asset, not a slide deck. I will show minimal, auditable AI use-cases that measurably shorten cycle time and reduce failure rates: capacity and slot scheduling for autologous flows, real-time deviation triage, and in-process signals that inform faster, safer decisions. The emphasis is on trust-by-design: clear data lineage, monitored model performance, and change control. This means that AI changes the schedule or makes a decision only when it is demonstrably safe to do so.

The goal is simple: make reliability routine. When CGT becomes reliable and repeatable, access grows, costs per treated patient trend down, and the field earns the trust implied by the conference theme: Ethics and Efficacy.

Biography:

Stefan Sandström is CEO of Biosector, a Japan-based commercialisation specialist for life sciences. For nearly two decades in Japan, he has helped non-Japanese companies establish and scale with Japan's pharma/biopharma industries. He has facilitated business with 32 of Japan's largest pharmaceutical companies. His focus is on "what is next for the industry" and applied, auditable AI that shortens cycle time and improves right-first-time. A frequent speaker at CGT and bioprocess meetings, he blends training in chemical engineering and medicine with hands-on go-to-market execution to make advanced therapies manufacturable and accessible. Originally from Sweden, he lives in the Tokyo–Yokohama area and works across Asia, Europe, and North America to help companies convert scientific breakthroughs into dependable patient access.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

ORAL SESSION 2 | DAY 3

Melinda Hysenaj*[1], Patricia Tai[2], Tracy Quan[3], Kurian Joseph[4], Edward Yu[5]

[1]University of Pristina "Hasan Prishtina", Faculty of Medicine, Prishtina, Kosovo.

[2]Division of Oncology, U. Saskatchewan, Saskatoon, Saskatchewan, Canada.

[3]LOFT 19 Dental, Vancouver, British Columbia, Canada.

[4]University of Alberta; Cross Cancer Center, Edmonton, Alberta, Canada.

[5]Western University, London, Ontario, Canada.

Photodynamic Therapy First Canadian Report of Healing Radiation Induced Skin Ulcers and Implication for Oncologists, Family Doctors and Nurse Practitioners for Wound Healing

Introduction: Photodynamic therapy (PDT) promotes wound healing; however, its clinical use has not been investigated in humans for radiation-induced skin ulcers.
Methods and Materials: We documented the first Canadian in-human case and searched the PubMed literature using "PDT" and "radiation" and "ulcer" terms.
Results: PDT has been used to disinfect caries dentin prior to restoration, disinfecting oral tissues before or during surgical procedures, treating denture stomatitis, and treating oral candidiasis in immunocompromised patients. Radiation-induced ulcers are difficult to treat. Our team treated a chronic chest wall ulcer of five years' duration, which developed after mastectomy and adjuvant radiotherapy. Six laboratory studies involving a total of 95 rats reported an overall healing efficacy of 90% for radiation-induced skin ulcers. In our case, we applied topical 5-aminolevulinic acid (5-ALA), which was activated by red light (wavelength 630 nm) after five hours of incubation. The schema used was three 30-minute treatments at months 0, 1, 5, which can vary depending on response. Compared to hyperbaric oxygen therapy (HBOT), Photodynamic therapy (PDT) is non-invasive and has fewer complications, like skin irritation or swelling, which rarely require steroid treatment, and less photosensitivity and retinal damage. PDT is cheaper: 5-ALA costs only CAN$500 per session for Metvix (methyl 5-ALA, currently approved by Health Canada), whereas HBOT requires 30 sessions, costing about CAN$15,000. The PDT procedure is an emerging therapeutic modality for dentists, as it is simple and safe.
Conclusions: Laboratory publications substantiate the efficacy of PDT on radiation-induced skin ulcer healing. The first Canadian clinical case was documented by us. It is cost-effective, with growing potential applications for treatment of radiation-induced cutaneous ulcers.

Biography:

Dr. Melinda Hysenaj is a medical student who will soon complete her studies in General Medicine at the University of Prishtina "Hasan Prishtina." During her studies, she worked as an Albanian language tutor with Peace Corps volunteers. She is interested in professional nursing training, and very passionate about medical education. She collaborates with seven other classmates in the cancer research team of Professor Patricia Tai in Canada who serves as a mentor for them all.

Aoife Jones Thachuthara*[1], Kurian Joseph[2], Michael Veness[3], Jidong Lian[4], Avi Assouline[5],Vimal H. Prajapati[6], Edward Yu[7], Patricia Tai[8]

[1]Department of Medical Oncology, Cork University Hospital, Cork, Ireland.

[2]Department of Radiation Oncology, Cross Cancer Centre; Division of Oncology, University of Alberta, Edmonton, AB, Canada.

[3]Department of Radiation Oncology, Westmead Cancer Care Centre, Westmead, New South Wales, Australia.

[4]Division of Radiation Oncology, Trillium Health Partners, Mississauga, ON, Canada.

[5]Oncologue Radiothérapeute Centre Clinique de la Porte de Saint-Cloud/Americain Hospital of Paris, France.

[6]Department of Dermatology, University of Calgary, Calgary, AB, Canada.

[7]Department of Oncology, Western University, London, ON, Canada.

[8]Department of Oncology, University of Saskatchewan, Saskatoon, SK, Canada.

949 Patient Database of Merkel Cell Carcinoma of the Skin the Optimal Nodal Radiotherapy Volume

Background: Although Merkel cell carcinoma (MCC) often spreads to lymph nodes, there is limited research on indications for nodal
radiotherapy (NRT). Our objective is to find the optimal radiotherapy nodal volumes for MCC.
Methods: Data (Mar/1982 - Feb/2015) from six institutions from Canada, France and Australia was combined with individual patient
data from a PubMed search of the English and French literature. A 949-patient aggregated database was built. The primary outcome was nodal recurrence, with overall survival as a secondary outcome.
Results: Intotal, 939/949 patients were evaluable, 50.8% of which were male, with a median follow-up of 21 (range: 0-272) months,
and a median age of 73 (range: 31-96) years, with 77.5% (728/939) having clinically localized cancer (stage I and II).
Among irradiated new (previously untreated) patients,all stages, 53% received NRT, 34.9% (80/229) no NRT and 11.8% (27/229) unknown if NRT was given. For recurrent cases, 94.7% (18/19) had NRT while 5.3% (1/19) did not.
There were 682 new patients with clinical stage I or II: nodal recurrence was 16% (8/50) with NRT, 40.1% (250/624) without NRTand 1.2% (8/682) uncertain if NRT was given (*P*=0.0001, chi-square test with Yates correction [cstYc]). 5-year Kaplan-Meier cause-specific survival was 77.6% vs 60.6% (*P*=0.2, logrank test) with/without NRT for these 682 new patients. We then focused on all
stages of small primary tumors <1 cm, the nodal recurrence was 17.4% (4/23)/24.6% (28/114) with/

without NRT (*P*=0.6, cstYc).
CONCLUSIONS: Overall, NRT significantly reduced nodal recurrence. Management of small primary tumors ≤1 cm warrant further investigation with multicenter participation.

Biography:

Aoife is a Medical Oncology Resident training in Cork University Hospital, Ireland. She graduated from medical school in University College Cork, Ireland and completed her Internal Medicine Training under the Royal College of Physicians of Ireland (RCPI).

Lorent Sijarina*[1], Patricia Tai[2], Kelvin Wong[3], Rashmi Koul[4], Abind Dubey[5], Edward Yu[6], Evgeny Sadikov[7]

[1]University of Prishtina, Faculty of Medicine, Kosovo.

[2]Division of Oncology, University of Saskatchewan, SK, Canada.

[3]Astellas Pharma Canada, ON, Canada.

[4]Cancer Care Manitoba, Winnipeg, Canada.

[5]Cancer Care Manitoba, Winnipeg, Canada.

[6]Department of Oncology, Western University, ON, Canada.

[7]Department of Oncology, University of British Columbia, BC, Canada.

Applying Concepts of Lean Management Evaluation of a Pioneer Off Site Injection Program for Androgen Deprivation Treatment of Prostate Cancer

Aim: With the rising number of prostate cancer patients needing androgen deprivation therapy (ADT), especially with new monthly gonadotropin-releasing hormone (GnRH) antagonist injections, our province became the first in Canada to implement an off-site injection program. The goal was to decentralize ADT administration from hospital clinics, reduce healthcare workload, and improve patient access (concept of " Lean Management"). This study evaluates program acceptance, challenges, and outcomes after its implementationestablishment.

Methods: Nurses in the Community Oncology Program of Saskatchewan (COPS), designated drug stores, and home injection programs, are trained by nurses from the two tertiary cancer clinics and pharmaceutical drug company representatives in Saskatchewan. Since 2012, the pharmaceutical drug companies hired nurses at for off-site injection programs. Patients with mobility or travel barriers were offered home injection. Oncologists identified patients and coordinated care through the pharmaceutical drug company. Initially, patient consent required faxing to off-site programs in cities and COPS in rural areas. In later years, electronic health records and incident reporting were introduced. In 2014, 60 patients were randomly selected from the total 662 in injection programs to evaluate the initiative, based on feedback via telehealth, faxed nursing reports, and electronic health record reviews.Initially, patient consent required fax to the off-site programs in cities and COPS in rural areas. In later years, electronic health records and incident reporting were introduced. In 2014, 60 patients were randomly selected from the total 662 patients on injection programs to evaluation the program, by feedback via telehealth, faxed nurse reports and checking electronic health records.

Results: By 2014, 662 patients were enrolled. Many rural patients valued receiving care closer to home, and staff experienced smoother workflows. Some miscommunications led to missed home visits or

confusion about medication changes. An increased incident of rise in injection reactions at one rural hospital prompted retraining. Delays in scheduling or drug supply were managed addressed by through better team communication. Patients traveling abroad (“snowbirds”) maintained treatment continuity. Routine PSA monitoring improved as nurses reminded patients about follow-up tests.
Conclusions: The off-site ADT program has proven feasible and beneficial, enhancing patient access and relieving hospital clinics. Improved communication and health record integration are key for continued progress. Decentralizing care has increased efficiency and aligns with Llean Mmanagement principles, improving both service delivery and patient experience.

Biography:

Dr. Lorent Sijarina is a medical studentdoctor from Kosovo who will graduate from the Faculty of Medicine, University of Prishtina in June 2025. His main areas of interest include oncology, urology, cardiology, and medical research. In May 2025, he presented his graduation thesis at the National Conference of Medical Sciences held in Tirana, contributing to academic dialogue among peers and professionals. Dr. Sijarina is recognized for his dedication, curiosity, teamwork, and patient-centered approach. He aims to specialize in a field that integrates scientific innovation with compassionate care to improve patient outcomes.

Liburn Grabovci[1*], Lorent Sijarina[2], Avi Assouline[3], Evgeny Sadikov[4], Melody Qu[5], Edward Yu[6], Kurian Joseph[7], Patricia Tai[8]

[1]University of Pristina "Hasan Prishtina", Faculty of Medicine, Prishtina, Kosovo.

[2]University of Prishtina, Faculty of Medicine, Kosovo.

[3]Collège de Médecine des Hôpitaux de Paris, Paris, France.

[4]University of British Columbia, Vancouver, BC, V6T 1Z2, Canada.

[5]Western University, London, Canada.

[6]Western University, London, , Canada.

[7]Dept of Radiation Oncology/Dept of Medical Physics, Cross Cancer Center, University of Alberta, Canada.

[8]Dept of Radiation Oncology, University of Saskatchewan, Saskatoon, SK, Canada.

Update of Central Nervous System Tumors

Background: Tumors of the central nervous system (CNS) are classified as primary or secondary, with metastatic (secondary) tumors being more common. These tumors contribute significantly to morbidity and mortality. Numerous advances have been made in the past decade**.**
Methods: A literature review was conducted using PubMed and recent conference proceedings over the past 10 years**.**
Results: Most recent progress has occurred in systemic therapies:
(A) Vorasidenib, approved by the U.S. Food and Drug Administration (FDA) for patients with Grade 2 astrocytoma or oligodendroglioma harboring isocitrate dehydrogenase (IDH)1 or IDH2 mutations.
(B) Tovorafenib, approved by FDA,It is a type II RAF kinase inhibitor for patients of 6 months or older, with relapsed or refractory pediatric low-grade glioma harboring a BRAF fusion, rearrangement, or V600 mutation. Approval was based on the FIREFLY-1 trial (NCT04775485), a single-arm, open-label, multicenter study in patients aged 6 months to 25 years. Among 76 patients, the overall response rate was 51% (95% CI, 40–63), with a median duration of response of 13.8 months (95% CI, 11.3–not estimable).
For radiotherapy:
(A) the QUARTZ trial (total 538 patients) laid important groundwork for future research. Whole-brain radiotherapy (WBRT) was associated with significantly more drowsiness, hair loss, nausea and scalp irritation compared to dexamethasone alone, and showed no survival benefit for most patients—except those younger than 60 or in favorable Graded Prognostic Assessment (GPA) categories (score ≥2 .5).
(B) Another important concept has developed: the Brain Metastases Velocity (BMV) score, defined as the cumulative number of new brain metastases

after initial stereotactic radiosurgery (SRS) divided by time (in years), predicts survival: 12.4, 8.2, 4.3 months for BMV ≤3, 4-13 and ≥14, respectively. A lower BMV correlated with reduced salvage WBRT (P=.02) and neurologic death (P=.008). Predictors of higher BMV included ≥2 initial brain metastases (P=.004) and melanoma histology. This metric has been validated after subsequent SRS courses.
(C) Radiotherapy technique for brain metastases in the NRG Oncology CC001, a Phase III trial, hippocampal avoidance (HA) in combination with WBRT and memantine (M). This combined treatment was found to better preserve neurocognitive function in patients with brain metastases. They were stratified by Recursive Partitioning Analysis (RPA) class and prior radiosurgery or surgery, then randomized to WBRT+M or HA-WBRT+M (30 Gy in 10 fractions).
(D) With the expanding role of immunotherapy, questions remain about the necessity of radiotherapy for brain metastases. For small lesions not located in critical areas (e.g., brainstem, motor cortex), systemic therapy—with or without local intervention—may suffice. Nonetheless, stereotactic radiosurgery continues to play an important role both as initial and salvage therapy.
Another two noteworthy innovations are:
(A) the FDA approval of tumor treating fields, which are now used to slow or halt glioblastoma cell division.
(B) MVR-C5252 - the PuMP Trial is a phase 1, open-label study of the oncolytic herpes simplex virus type 1 for recurrent high-grade glioma. Delivered directly into tumors via convection-enhanced delivery (CED), the virus carries genes for IL-12 (immune activation) and anti-PD-1 (immune checkpoint blockade. This dual mechanism is intended to convert “cold” tumours (immune-suppressive) into “hot” (immune-active) tumours, a significant challenge in glioblastoma treatment. Second, while many CED trials have been conducted before, the implantation of a pump that enables repeated doses, allowing both priming and boosting doses of the immunotherapeutic agent, is new.
Conclusions: Significant advances in both systemic and radiation therapies have occurred in CNS oncology. However, continued research into early diagnosis and treatment strategies that improve quality of life and survival remains essential.

Biography:

Liburn Grabovci is a medical student and will graduate to be a medical doctor in Kosovo. His interests include surgery and internal medicine, and he aims to pursue postgraduate specialization while remaining dedicated to lifelong learning, professional growth and works in scientific papers. He collaborates with his other colleagues in the cancer research team of Professor Patricia Tai in Canada who serves as a mentor for them all.

Drilon Bytyçi*[1], Lorent Sijarina[2], Evgeny Sadikov[3], Aoife Jones Thachuthara[4], Kelvin Wong[5], Patricia Tai[6]

[1]Faculty of Medicine, University of Prishtina, Kosovo.

[2]Faculty of Medicine, University of Prishtina, Kosovo.

[3]Division of Radiation Oncology, University of British Columbia, Canada.

[4]Dept of Medical Oncology, Cork University Hospital, India.

[5]Astellas Pharma, Canada.

[6]Division of Oncology, University of Saskatchewan, Canada.

Pathologist's Role in Prostate Cancer Management

Background: Prostate cancer is routinely graded using the Gleason scoring system, based on the microscopic appearance of prostate tissue in 12-core biopsy samples. Over the years, this scoring system has undergone significant refinement to improve diagnostic precision and clinical applicability. Despite these updates, controversies persist—particularly concerning the identification and classification of small cell components, which can significantly alter both prognosis and treatment planning.

Accurate grading remains critical in determining patient management pathways. While the current criteria for each Gleason pattern are clearly defined, we hypothesize that interobserver variability still exists among pathologists. This inconsistency raises important clinical questions: Would implementing a double-read system for prostate biopsies improve diagnostic accuracy? Is such an approach financially sustainable? And what would be the impact on turnaround time for results, especially in resource-constrained settings?

Methods: We conducted a global literature review via PubMed and news sources to explore existing data on diagnostic consistency, cost-effectiveness, and logistical considerations related to double-reading prostate biopsies.

Results: Difficult-to-manage prostate cancer scenarios often arise when there is diagnostic ambiguity, for example, disagreement over whether a pattern 3 versus pattern 4 is present, or how to interpret cribriform architecture. Disparities in diagnosing rare variants, such as small cell carcinoma or intraductal carcinoma, further underscore the complexity of histopathological evaluation. Such cases illustrate the indispensable role of pathologists not only in grading but also in shaping multidisciplinary treatment decisions. Unfortunately, there is limited literature on the feasibility or practicality of a double-read system. Artificial intelligence may offer support in improving diagnostic accuracy and precision.

Conclusions: The Gleason grading system is critical in diagnosing and managing prostate cancer. Accurate grading by pathologists is essential since it affects treatment decisions and patient outcomes.

Continuous advancements in grading methods and diagnostic technology are enhancing prostate cancer management, leading to improved patient results.

Biography:

Drilon Bytyçi is a medical student from Kosovo and will graduate from the University of Prishtina. He already holds a Bachelor's degree in Radiologic Technology since 2022. His main interests include radiology, otorhynolaryngology, oncology and medical research. In May, he presented his graduation thesis at the National Conference of Medical Sciences in Tirana, contributing to academic dialogue among peers and professionals. He has a strong interest in evidence-based medicine, integrating current literature into practice and contributing to systematic reviews and data analysis. He is skilled in academic writing, medical imaging interpretation and structured clinical reasoning.

Shend Kryeziu*[1], Liburn Grabovci[2], Omar Alqaisi[3], Patricia Tai[4], Jidong Lian[5], Rashmi Koul[6], Vimal Prapatjati[7]

[1]University of Pristina "Hasan Prishtina", Faculty of Medicine, Prishtina, Kosovo.
[2]University of Pristina "Hasan Prishtina", Faculty of Medicine, Prishtina, Kosovo.
[3]Faculty of nursing, Al-Zaytoonah university, Amman.
[4]Dept of Radiation Oncology, University of Saskatchewan, Saskatoon, Canada.
[5]Division of Radiation Oncology, Trillium Health Partners, Mississauga, Canada.
[6]University of Manitoba, 675 McDermot Ave, Winnipeg, Canada.
[7]Division of Dermatology, University of Calgary, Canada.

An Observational Study of Cutaneous Merkel Cell Carcinoma: Deducing the Pattern of Spread from an International Aggregated Database of 949 Patients

Background: The progression pathway of Merkel cell carcinomas (MCCs) remains a subject of ongoing debate, particularly regarding whether these tumors tend to metastasize first to lymph nodes or directly to distant organs. Clarifying this pattern is vital for understanding disease progression and refining treatment strategies. In 2023, a trial of adjuvant immunotherapy with nivolumab versus observation in the completely resected MCC (ADMEC-O trial) demonstrated that adjuvant nivolumab increased disease-free survival.

Methods: To explore recurrence patterns and the metastatic trajectory of MCC, data were compiled from a cohort of 303 patients treated across six institutions between March 1982 and February 2015. This institutional data was then supplemented by a systematic search of PubMed for individual patient records, yielding a total study population of 949 patients. The primary objective was to determine the pattern and sequence of metastatic spread, specifically examining the prevalence and timing of lymph node metastases (LNM) and distant metastases (DM).

Results: Several key findings emerged from the analysis:

(a) At the time of initial diagnosis, a greater proportion of patients presented with LNM (17.9%) compared to those with DM (1.9%), based on the 929 patients with available staging data.

(b) Over the course of disease, 310 out of 929 patients (33.4%) developed distant metastases. Of those, 220 patients also experienced lymph node involvement. Notably, 133 patients were documented to have developed lymph node metastases prior to the onset of distant spread.

(c) The median time interval from initial diagnosis to LNM was shorter—1.5 months (range: 0–47.0 months)—compared to the median time to DM, which was 8 months (range: 0–107.8 months). This suggests a sequential pattern in which lymphatic dissemination often precedes systemic metastasis.

(d) Interestingly, even among patients with primary tumors less than 1 cm in diameter, 2.4% (23 of 949) eventually developed distant metastases. The smallest tumor associated with DM measured just 0.2 cm, highlighting the aggressive nature of MCC even at early stages.

Conclusions:
Collectively, these findings support the hypothesis that LNM typically precedes DM in MCC, suggesting that lymphatic spread may act as a precursor or gateway to further systemic dissemination. This has important clinical implications: patients who present with nodal involvement may represent a high-risk population and could particularly benefit from intensified therapeutic strategies, including adjuvant systemic therapy. The identification of LNM as a potential precursor to DM reinforces the importance of early detection, thorough initial staging and vigilant monitoring. Participation in clinical trials is strongly recommended, both to optimize patient outcomes and to further refine understanding of metastatic progression in Merkel cell carcinoma.

Biography:

He is a medical student and will graduate to be a medical doctor in Kosovo. His interest is cancer research. He collaborates with his other colleagues in the cancer research team of Professor Patricia Tai in Canada who serves as a mentor for them all.

Yasmeen Idrees*[1], Mohammed Dibas[2], Patricia Tai[3]

[1]Yasmeen Idrees, Fatima Jinnah Medical University, Lahore, Pakistan.

[2]Mohammed Dibas, Department of Medicine, An-Najah National University, Nablus, Palestine.

[3]Patricia Tai, Department of Radiation Oncology, University of Saskatchewan, Saskatoon, SK, Canada.

Analysis of Cautionary Tales (Medical Errors and Near Misses) in Patient Care

Background: Medical errors remain a significant threat to the quality of healthcare, the third leading cause of death in America, about 1 in every 14 hospital patients. Categorization and appropriate preventive measures are of paramount significance.

Method: A comprehensive literature review was conducted using PubMed and selected media sources. We categorized and analyzed them based on their frequency of occurrence. This review was conducted by experienced clinical researchers representing both Asian and North American cultural backgrounds.

Results: Communication is the most frequent pitfall leading to such occurrences. Physician burnout is another significant factor contributing to medical errors and vice versa. Incomprehensive verbal/nonverbal communication affecting interpretation of order, along with poor clinical judgement and lack of resources, a lack of awareness of patient's past medical history and expressed concerns are contributory factors.

Wrong prescription in terms of drug type, dosing, timing and frequency compromise patient safety and the overall quality of healthcare. affect safe healthcare of patients. Drug allergy remains a contributing factor in therapeutic errors, particularly when medications have similar pronunciations. For example, "azithromycin" was mistakenly written on the wristband of an elderly patient by a busy emergency room triage nurse, though the actual allergy was to erythromycin. This error was only discovered later by a literate family member.

Physician burnout due to a shortage of resources and long shifts has end up in actual harm or near misses in multiple incidences. On the other hand, physicians themselves can become "second victims" after committing errors, suffering profound emotional distress including anxiety, guilt, and depression, also to the level where it might resemble PTSD symptoms, which may impair their clinical performance. A study conducted among 125 medical residents in the U.S. found that 86.5% had subsequent emotional disturbances, most commonly guilt, anxiety, and insomnia following medical errors. However, only 24.3% of these residents received any emotional support. Also, the fear of impending legal action affects them further, which adds to their psychological burden, exacerbating stress and contributing to burnout.

Strategies such as clearly Defining the chain of communication, involving patients and caregivers' carers

for their concerns, double checking at all stages of patient care seem to be the solution for preventing such occurrences. An elaborate documentation using color codes where necessary, legible writing and clearly typed detailed typing orders can further minimize medical errors.
Supporting physicians both physically and mentally can contribute to their cognitive and overall well-being which can lessen the risk of poor clinical judgement. Fostering a culture of learning, transparency, and continuous improvement in safe healthcare delivery—rather than one rooted in blame, shame, or the threat of legal action—offers greater overall benefits. Such a culture encourages openly reporting near misses and adverse events, facilitates collaborative problem-solving, and promotes resilience among healthcare professionals.

Conclusion: Guidelines for investigating medical errors, conducting timely risk assessment, and performing root cause analysis are modern solutions for addressing pitfalls in safe and effective healthcare delivery. These practices allow institutions to systematically identify vulnerabilities within clinical workflows and address the underlying causes of medical errors, rather than focusing solely on individual mistakes. Investing in software for incident reporting and analysis may be the most practical and tangible approach.

Biography:

Dr. Yasmeen Idrees is a medical graduate of Fatima Jinnah Medical University Lahore, Pakistan. Following her graduation, she pursued postgraduate training in General Internal Medicine and completed MRCP (UK) as her postgraduate qualification. She is keen to explore research in medical field and collaborated with Professor Patricia Tai in Canada for the same.

Qian Zhong
The Division of Molecular Pharmaceutics and Drug Delivery, College of Pharmacy, The University of Texas at Austin, Texas

Inhalable Point-of-Care Urinary Diagnostic Platform for Early Detection of Lung Cancer

Introduction: Identifying lung cancer at an early stage has been correlated with a higher 5-year survival rate due to timely intervention. Current diagnostic regimes require extensive resources, which can be inaccessible especially in geographic regions with escalating cancer incidences and limited infrastructure. Furthermore, the recommended screening for high-risk patients is low-dose computed tomography, which suffers from high false positive rates. Our previous work has demonstrated lung cancer can be detected using imaging-free sensing of aberrant protease activity in the tumor microenvironment via urinary reporters shed from activity-based nanosensors (ABNs). Further engineering of ABNs for clinical implementation at the point-of-care could significantly improve resource inequalities in the detection of lung cancer. In this work, we designed a needle- and imaging-free platform — **P**oint-of-care **A**erosolizablenanosensors with **T**umor-**R**esponsive **Ol**igonucleotides (PATROL) — to screen for lung cancer at early stages.

Materials and Methods: PATROL integrates 3 modules: a set of multiplexed ABNs, a portable inhalation device, and a paper-based, multiplexable lateral flow assay kit. The ABNs were conjugated with pre-designed DNA barcodes via protease-activatable peptides. ABNs were then reformulated into an aerosolizable format. Using a mouse model of autochthonous lung adenocarcinoma (LUAD) at an early stage, we delivered ABN aerosols to the tumor-bearing lungs, where the selected substrates were cleaved in the tumor microenvironment to shed DNA barcodes concentrate in urine for detection. The urinary output was obtained using a paper-based, multiplexable lateral flow assay. Unsupervised learning model was used to differentiate lung adenocarcinoma from healthy counterparts.

Results and Discussion: We used transcriptomic and proteomic analyses to nominate protease substrates specific to early-stage LUAD and constructed a corresponding set of DNA-coded ABNs to probe tumor-associated proteolytic signatures. Through *in vivo* screening, we further narrowed down a small library of 4 DNA-barcoded ABNs that not only retain adequate diagnostic power to detect unique proteolytic activity patterns but also are adapted to low resource requirements in point-of-care assays. We demonstrated the inhaled ABNs possessed similar diagnostic capability as those administered via invasive intratracheal instillation. We validated that the rationally designed single strip lateral flow assay can read out the unique, multiplexed DNA signatures in the urine at room temperature in only 20 minutes, with comparable sensitivity and specificity to that via liquid chromatography-mass

spectrometry in centralized diagnostic laboratories. Collectively, we used an autochthonous mouse model of LUAD and validated that PATROL differentiated Grade I/II tumors with high specificity and sensitivity.

Conclusions: In summary, we engineered PATROL as a detection paradigm to screen for lung cancer using point-of-care-relevant technology. PATROL integrates inhalation technology, synthetic activity-based biomarkers, and multiplexable lateral flow assays, and has been validated as a non-invasive, imaging-free approach for early screening of lung cancer in a preclinical mouse model. PATROL also holds the clinical potential to enable a larger, high-risk population to gain access to periodic screening of lung cancer in all settings. We envision that this modular platform could be applied to point-of-care detection and therapeutic response assessment of other lung diseases.

Biography:

Dr. Zhong is an Assistant Professor in the Division of Molecular Pharmaceutics and Drug Delivery in the College of Pharmacy at the University of Texas at Austin. Dr. Zhong was a Postdoctoral Associate and Research Scientist in Prof. Sangeeta Bhatia's lab in the Koch Institute for Integrative Cancer Research at the Massachusetts Institute of Technology. Dr. Zhong earned his B.S. and Ph.D. in Materials Science. Dr. Zhong's current research integrates interdisciplinary approaches to engineer highly modular biomaterials-centric molecular probes and drug delivery systems that harness pathological microenvironment i) to profile disease-related enzyme biomarkers, ii) to enable noninvasive detection and therapeutic assessment of cancer and chronic diseases at the point-of-care, and iii) to achieve tissue- and cell-specific delivery of biologics, particularly for gene editing and immuno-engineering.

Joint Event on

Cell & Gene Therapy World Conference & Cancer R&D World Conference

10-12 September 2025

POSTER SESSION | DAY 3

Erin Kaser*[1,4], Kyle D'mello[1,5], Yujiang Fang[1,2,3], Aymen Baig[4]

[1]The Department of Microbiology & Immunology, Des Moines University College of Osteopathic Medicine, Des Moines

[2]The Department of Surgery, University of Missouri School of Medicine, Columbia.

[3]Ellis Fischel Cancer Center, University of Missouri, Columbia.

[4]The Department of Internal Medicine at University of Texas San Antonio, San Antonio, USA.

[5]The Department of Emergency Medicine at University of Texas San Antonio, San Antonio TX, USA.

Not So Safe Sage: Sage's Pro Cancer Effects on Cervical Cancer

Background: Cervical cancer (CC) is the fourth most common malignancy in females and is a leading cause of death worldwide. Infection with human papilloma virus (HPV) is a major risk factor for CC. Sage, the genus *Salvia*,is an important medicinal plant that has anticancer, antioxidant, and anti-inflammatory properties. However, sage is not as angelic as once believed. There is little literature regarding the pro-cancer effects of sage. This study was designed to investigate sage extract (SE) on CC.
Methods:Clonogenic survival assay, cell proliferation, and caspace-3 activity kits evaluated the effects of SE on CC cell survival, proliferation, and apoptosis of the CC cell line HeLa. Our study investigated the molecular mechanisms on growth and survival using RT-PCR.
Results:The percentage of colonies of CC cells significantly increased after SE treatment. This paralleled with the increase of the OD value of cancer cells after treatment with SE. This was further supported by the increased expression of PCNA mRNA after treatment with SE. Additionally, the cellular caspase-3 activity decreased after treatment with SE. The pro-proliferative effect of SE on CC cells correlated with increased levels of CDK4 and decreased p21. The anti-apoptotic effect of SE on cervical cancer cells correlated with increased survivin.
Conclusions:SE promotes growth of CC cells by promoting proliferation and inhibiting apoptosis, and the molecular mechanisms of this phenomenon may be related to increased CDK4, decreased p21, and increased survivin. Our study proudly contributes to the examination of development of new promising treatment options for CC.

Biography:

I completed medical school at Des Moines University in Iowa, and I am currently a second-year internal medicine resident at the University of Texas at San Antonio and interested in applying to hematology/oncology fellowship.

Alexander Rahman
School of Computing and Augmented Intelligence,Arizona State University, USA

A Quantum Machine Learning Approach to Identifying Stress-Linked Cancer Risk

Stress plays a critical role in cancer risk, progression, and patient outcomes. This study presents Stress Map-Q, a quantum machine learning model designed to identify stress patterns linked to oncogenic activity, by analyzing multimodal datasets—stress scores, cortisol levels, and gene expression. Stress Map-Q accurately classifies high-risk profiles. Using quantum kernel estimation and variational quantum classifiers, the model outperforms classical methods in detecting stress-related cancer indicators, offering a new path for early risk detection in psycho-oncology.

Biography:

Alexander Rahman is a quantum machine learning researcher at ASU with a focus on computational biology, psycho-oncology, and AI ethics. His work bridges quantum computing with mental and physical health research, aiming to develop interpretable AI tools that address complex biological interactions such as the stress-cancer link. He has led interdisciplinary studies on behavioral health modeling and quantum-enhanced diagnostics and is passionate about the translational potential of QML in precision medicine and preventive care.

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