RESEARCH

# Highlights of the International Conference on Cancer Health Disparities 2024

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## ABSTRACT

The second International Conference on Cancer Health Disparities 2024 (ICCHD-2024) served as a pivotal platform for global collaboration and discussion on the issue of cancer health disparities. The University of Texas Rio Grande Valley School of Medicine (UTRGV-SOM) hosted this event on February 9-10, 2024 in Mission, Texas, USA. The ICCHD-2024 was a two-day scientific gathering that attracted over 190 delegates from eight countries, participating in a hybrid format. The ICCHD-2024 brought together a diverse array of participants from various educational and national institutions, alongside leading researchers, healthcare professionals, policymakers, advocates, and community members. This scientific event, focused on cancer health disparities, featured exceptional scientific talks, and presented the latest research from diverse fields seeking to address and mitigate the unequal burden of cancer facing various populations worldwide. Cancer harms all ethnic groups globally, but due to societal, ecological, and economic hindrances, certain minority and underserved populations bear an uneven burden of cancer compared with other groups. The conference agenda covered various aspects of cancer and disparities including cancer and disparities associated with molecular mechanisms; purple night-a pancreatic cancer awareness events; poster and oral presentations; displays of the latest and advanced scientific equipment; and young scientist investigator talks and poster presentations, concluding an award ceremony and closing remarks. This report encapsulates the key discussions, findings, and topics explored during the conference. Altogether, the ICCHD-2024 contributed to the advancement of evidence-based approaches to combating cancer health disparities, ultimately striving towards achieving health equity for all individuals affected by this multifaceted disease.

KEYWORDS: Research symposium; cancer health disparities; cancer biology; race/ethnicity; drug delivery; medical research.

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## Introduction

As the American Association for Cancer Research (AACR) stated in 2022, cancer health disparity is measure of differences in the occurrence, prevalence, death, and burden of cancer between different populations. These disproportions can occur due to a multitude of factors including but not limited to, ethnicity, race, geography, socio-economic level, approach to healthcare, cultural beliefs, and lifestyle selections (Siegel et al., 2020; Wallace et al., 2011). A few sub-population groups may face higher rates of cancer occurrence or cancer associated death, lesser numbers of cancer diagnosis and prevention, or gaps in access to decent cancer care compared to other privileged sub-population groups. Cancer health disparities can be tackled by implementing thoughtful and reasonable access to cancer screening, prevention, management of therapeutics, and supportive care facilities for all cancer patients irrespective of their circumstances (Minas et al., 2021). Data related to notable cancer incidence and mortality disparities in the United States (US) has been published by the National Cancer Institute (NCI) (https://www.cancer.gov/about-cancer/understanding/disparities). This data provides extent of cancer disparities for specific demographic populations. For example, African American women are more prone to mortality from the disease compared to White women. African American men and Jamaican men of African descent, having the highest rate of prostate and lung cancer compared to White men and Hispanic men and the highest mortality rate among all US population sub-groups for these cancers (Huo et al., 2009; O'Keefe et al., 2015). Rural populations face substantially higher prevalence rates of colorectal, lung, and cervical cancers compared to those in metropolitan areas within the region (Vanderpool et al., 2019). Hispanic/Latina and African American women exhibit higher rates of cervical cancer compared to other groups, while African American women face the highest mortality rates from the disease. In contrast, American Indians and Alaska Natives are more susceptible to higher mortality rates for renal, liver, and intrahepatic bile duct cancer compared to other groups.

According to the Texas Cancer Registry (TCR), breast, lung, prostate, gall bladder, cervical, and colorectal cancers are the most common cancers in South Texas. The incidence rate of breast cancer makes it the second most common cause of cancer-related death for women of all races and ages in Texas, compared to other forms of cancer (Khan et al., 2021). Texas also has the highest rate of liver cancer in the US. In 2021, the age-adjusted incidence rate (AIR) was 13.2/100,000, 45% higher than the national average. The incidence of liver cancer corelates with race, ethnicity, and geographical conditions within Texas (El-Serag et al., 2021). As per the SEER report, yearly AIRs were 1.2-fold higher in the Hispanic population than in the African American population and around 2.7-fold higher in non-Hispanic whites, although lower in Asian populations (El-Serag et al., 2007).

The University of Texas Rio Grande Valley (UTRGV) is a public academic and research university with campuses located in the Rio Grande Valley (RGV) of South Texas, on the US-Mexico border. The RGV is predominantly inhabited by Latino/Hispanic populations. UTRGV is one of the top leading Hispanic-serving institutions in the US, which maintains a distinct focus on combating health disparities for the 1.4 million individuals of the RGV. Identifying the crucial need of the region, the UTRGV School of Medicine (UTRGV-SOM) was established in 2015 to provide healthcare relief, medical education and training, and biomedical

research efforts, and improve the quality of life and health care for local RGV populations via advanced groundbreaking research and patient-centric care. The SOM is attracting and promoting biomedical research programs to address the health disparities prevalent within the Latino/Hispanic population of the RGV, training a versatile cadre of medical students, residents, and future biomedical scientists. In this context, the UTRGV-SOM initiated an annual research symposium in 2017. In 2021, UTRGV-SOM organized the 1st International Conference on Cancer Health Disparities (ICCHD-2021) in Harlingen, Texas (TX), USA. Over the years, UTRGV-SOM has successfully organized seven annual research symposia focused on health disparities in the RGV. The 2nd International Conference on Cancer Health Disparities (ICCHD-2024) took place during February 9-10, 2024, at the Mission Event Center, 200 N Shary Road, Mission, TX, USA. This two-day event attracted over 190 national and international delegates from eight countries participating in a hybrid mode through both in-person and online digital platforms. Notable attendees included representatives from the National Institutes of Health (NIH), the Cancer Prevention and Research Institute of Texas (CPRIT), and the City of Mission, alongside clinicians, faculty, scholars, scientists, and others. The conference, themed around cancer health disparities, featured special talks, and showcased research from various disciplines aiming to address health disparities affecting minority and underserved populations globally.

The lower South Texas, RGV is a hot spot for several cancer health disparities. The ICCHD-2024 was possible due to financial support from the NCI of the NIH and from the CPRIT (CA254453-01 and RP230419), along with funding and support from the UTRGV-SOM and scientific partners (Bruker Scientific, $H_2O$cean, Scintica, Shimadzu, SSA Foundation, ThermoFisher Scientific, Valencia Hall, BioTek, Eppendorf, Miltenyi Biotec, Nikon, UTRGV-SOM South Texas Center of Excellence in Cancer Research (ST-CECR), UTRGV SOM-Institute of Neuroscience, and UTRGV- Lab Animal Resources).

The scientific programs showcased interactive and society-engaged research (e.g., biomedical, clinical, and translational science) on global cancer health disparities, in a single-platform. The ICCHD-2024 gave emphasis to ways the scientific and medical community can work with community health societies/workers, to address collective objectives of addressing global minority health and disparities. The research topics included in this conference were focused on health disparities among Hispanic, African American, and American Asian/Indian populations. The ICCHD-2024 meticulously aligns with the vision and objectives of the NCI and National Institute on Minority Health and Health Disparities (NIMHD). This scientific gathering supported global cancer and cancer health disparity research to make it scientifically more advanced and helping all groups of people extend their quality of life after cancer diagnosis/treatment.

The main goals of ICCHD-2024 were as follows: 1) Encourage collaboration on an international scale to open scientific dialogues among basic, clinical, and translational cancer researchers from various institutions across the globe. 2) Establish a continuous education program for emerging researchers in the field of global cancer health disparity through ICCHD initiatives and promotion of community-based participatory research and patient care efforts. 3) Raise interdisciplinary partnerships to increase awareness of and address minority health disparities worldwide with the goal of abolishing these disparities. 4) Attempt to create a web of communication between basic scientists,

healthcare professionals, cancer patients, and their caregivers to enhance communication in patient management and simplify innovative discoveries to improve quality of life. 5) Establish a dedicated cancer awareness, such as "purple night - pancreatic cancer awareness" to observe and raise awareness of cancer. Encourage cancer survivors to share their stories of conquering the disease, emphasizing their journey through treatment and their life afterward, inspiring others in their fight against cancer.

## Conference Matrix

Many enthusiastic academicians, clinicians, researchers, scholars, and other people participated in the conference. A total of 144 abstracts were submitted via ScholarWorks and 139 final presentations were made at this conference. Ninety seven posters (from 16 Undergraduate student or High School students, 29 Medical students, 14 Graduate students, 9 Residents, 11 Postdoctoral fellows, 9 Faculty members, and 9 Staff members) were displayed. Additionally, 10 Keynote presentations, 17 Invited Speaker presentations, 5 Special Topics Speaker presentations, 42 oral presentations (from 14 Faculty members, 4 Postdoctoral fellows, 6 Graduate students, 6 Medical students, 7 Residents, 3 Staff members, and 2 Undergraduate and High School students) were delivered. A digital/virtual platform was also utilized by various participants internationally. As per the ForagerOne Metrics, 18 digital viewers, (155 paid registrants were provided access), 89 poster and oral presentations were uploaded, total 300 online visits took place, 160 presentation views, and 4 live sessions were organized during the conference.

## Summary of Conference

ICCHD-2024 not only resonates with the mission of the NCI Global Health Center and NIMHD but also signifies a revolutionary initiative in the RGV. This gathering was one of the few conferences globally which focused on cancer health disparity research. The ICCHD-2024 is an interactive platform and bridge which was established to catalyze a revolution in the culture of biomedical and health disparity research not only in the RGV, but also beyond its boundaries. The conference integrated groundbreaking health disparity content and policies, collaborating with civic health administrations and professionals.

The ICCHD-2024 encompassed six sessions: Session 1. Introduction to the conference, prevention, and eradication of cancer health disparities; Session 2. Cancer cellular and molecular biology; Session 3. Technical presentation on cutting-edge technology applications by scientific companies in cancer biology and disparity; Session 4. Purple Night: Pancreatic Cancer Awareness Event; Session 5. Poster and oral presentations, and early career investigator talks; and Session 6. Award ceremony and closing remarks.

Dr. Subhash C. Chauhan, Professor in the Department of Medicine & Oncology Integrated Service Unit (ISU) and Director of the ST-CECR at the UTRGV-SOM, began the conference by extending a warm welcome to all delegates and participants. He introduced Dr. Michael B. Hocker, Dean of the UTRGV-SOM and Senior Vice President of UT Health RGV; a Representative from the Office of the Mayor of Mission; and Ms. Abby Guillory, Assistant Vice President for Research Enhancement at UTRGV. They delivered brief insights into the roles and contributions of the Cancer Center, UTRGV SOM, and UTRGV research and graduate programs in addressing cancer and cancer health disparities within the RGV, Texas, the United States, and globally.

Day one of the symposium Session 1 opened with a keynote lecture by renowned scientist Dr. Keshav Singh, Professor of Genetics, University of Alabama School of Medicine, who presented a keynote talk on "Decoding MitoGenomics in African Genomes to Decipher Cancer Health Disparities". He discussed how the genetic structure of mitochondria is different in various ethnic groups and how this difference contributes to determining cancer health disparities. Dr. Erin H. Seeley, Director of Mass Spectrometry Imaging Facility, Department of Chemistry, University of Texas at Austin, presented her work on the topic of "Mass Spectrometry Imaging Enables Multiplexed Multi-Omics Analysis of Tissue Sections". A technical presentation was delivered by Dr. Conor Mullens from Bruker on the concept of mass spectroscopy in enhancement of proteome coverage; and Dr. Kara Wendel, Product Manager, Biomedical Imaging at Scintica Inc., discussed biomedical imaging technologies including magnetic resonance imaging, positron emission tomography, and intravital microscopy. This session was moderated by Dr. Jennifer Cahn, Director of Research Administration, UTRGV-SOM.

In concurrent oral talk sessions, Dr. Mohammad Shabir Hussain from UTRGV (Postdoctoral Fellow) presented his work on "Proteomic Analysis of Stress Associated Factor Overexpression in Hepatocellular Carcinoma". Dr. Ryan P. Coll (Postdoctoral Fellow) from MD Anderson delivered his talk on the "Assessment of Mucin 13 (MUC13) as an Imaging Target for Guiding Colorectal Cancer Treatment: A Pathway Towards Theranostic Development". Dr. Lin Wang, Associate Professor from Health & Human Performance, UTRGV, talked about "Assessing the Reliability, Internal Consistency, and Sensitivity of a Nutrition Knowledge Questionnaire for Four-Year-Old Pre-K Children". This session was moderated by Ms. Staci Eaton, Director of Clinical Research, UTRGV.

Symposium Session 2 opened with the second keynote lecture delivered by Dr. James Alaro, Program Director, Center for Global Health, NCI, Washington DC, on the topic of "Embracing the Complexity: Transdisciplinary Approaches to Advance the Science of Cancer Health Disparities", followed by invited talks from Dr. Ajaikumar B. Kunnumakkara, Indian Institute of Technology-Guwahati, India, on the topic of "Tumor Necrosis Factor-α Induced Protein 8 Family as a Novel Molecular Target for Oral Cancer". Dr. Manal Hassan, Associate Professor, MD Anderson Cancer Center, discussed the genetic diversity of north Americans in liver cancer on the topic of "Genome-wide Association Study Identifies High Impact Susceptibility Loci for Hepatocellular Carcinoma in North America". Dr. Robert Tsai, Professor of the Center for Translational Cancer Research, Texas A&M Health, delivered a lecture on "Interrogating Genome-Wide DNA Methylation Changes in NAFLD Progression from Simple Steatosis to Advanced Fibrosis or NASH". This session was moderated by Dr. Jennifer Cahn. Symposium 3 moderated by Dr. Subhash C. Chauhan, invited Dr. Michelle M. Le Beau, Chief Scientific Officer, CPRIT, Austin, Texas, for the third keynote lecture on the topic of "CPRIT: Catalyzing the Fight Against Cancer in Texas". Here Dr. Le Beau discussed the role and funding mechanisms of CPRIT in combating cancer in Texas. This was followed by an invited talk from Dr. Eduardo Olivarez, Chief Administrative Officer, Hidalgo County Health and Human Services, Edinburg, Texas. He presented his work on the topic of "Infectious Disease Awareness in Cancer Treatment". Dr. Subhash C. Chauhan delivered a talk on "Prolonged Socio-psycho Stress in Cancer". Meanwhile, two more concurrent session were organized, oral presentation two opened with the

oral presentation of Ms. Arathi Radhakrishnan, Graduate Student from Amity University, Noida, India, on the topic of "Targeting Mycobacterial Efflux System for Combating Anti-microbial Resistance", followed by Dr. Anupam Dhasmana, Staff Scientist from UTRGV-SOM, who discussed the novel early detection biomarker of pancreatic cancer in a talk titled "CEACAM7 Emerges as a Promising Early Detection Biomarker in Pancreatic Cancer". Ms. Anusmita Shekher, from Banaras Hindu University, India, delivered a talk on "Moringin, an Isothiocyanate Improves the Susceptibility of Breast Cancer Cells to Doxorubicin". Mr. Andrew Kolodziej, a medical student from Internal Medicine, UTRGV, discussed a case report on the link between extracranial meningioma and musculoskeletal neoplasms. This session was moderated by Dr. Bilal B. Hafeez, Assistant Professor, UTRGV. A third oral presentation session was moderated by Dr. Manish K. Tripathi, Assistant Professor, UTRGV, and he invited Dr. Murali M. Yallapu, Associate Professor, UTRGV, to deliver a keynote lecture on the topic of "Nanomedicine: Basics to Cancer Therapeutics", where he has discussed the role of various nano materials in targeting cancerous cells, followed by oral presentation given by Dr. Melissa Cruz, UTRGV, on the "Comparative Effectiveness of Endovascular vs Surgical Arteriovenous Fistulas: A Preliminary Analysis". After this interesting talk, Dr. Mohammed Sikander, Assistant Professor from UTRGV, discussed a novel therapeutic strategy for cervical cancer treatment. Dr. Sheema Khan, Assistant Professor, UTRGV-SOM, delivered two topics on pancreatic cancer entitled "Antibody Mediated Targeted Drug Delivery Approach for Pancreatic Tumors" and "Novel strategy to make KRAS Targeted Therapies more Effective for PDAC Treatment". Both of topics were related to improving the therapeutic regime of pancreatic cancer. After a small break, the fourth symposium began with a keynote lecture by Dr. Jose Torres Ruiz, Office of Research Administration, Comprehensive Cancer Center-UPR San Juan, Puerto Rico (PR), on the topic of "Cancer Health Disparities Addressed by the Comprehensive Cancer Center-UPR in San Juan, PR". He discussed the status of cancer disparities in Puerto Rico in comparison with the rest of world. This was followed by the invited talk from Dr. Manoj K. Mishra, Professor of Biology and Director, Cancer Biology Research and Training at Alabama State University, on "Understanding the Role of Socioeconomic Factors in Prostate Cancer Health Disparities in Alabama". Dr. Tuula Klaavuniemi, from Eastern Finland University, discussed the role of basic sciences in clinical practices, "From Basic Science to Real World Clinical Practice - The Way to Provide the Best Care to Our Cancer Patients". Dr. Rajiv Saini, Chief Scientific Officer, from H2Ocean spoke to the audience about the benefits of ocean water in management of chronic diseases. He showcased products and their application in particular health conditions, especially in cancer for his talk titled "Oral Care in Cancer Survivorship: Discover the Healing Power of Sea Salt". A concurrent session was moderated by Dr. Anupam Dhasmana. In this session, Dr. Dev Karan, Associate Professor, Medical College of Wisconsin, delivered the sixth keynote lecture, "Analysis of Serum Cytokines-chemokines in Association with Prostate Cancer Disparity". Dr. Nirakar Sahoo, Assistant Professor, UTRGV, delivered his invited talk on the topic of "Targeting Ion Channels in Liver Cancer Cells: Stimulating Lysosomal TRPML1 and Inhibiting hEAG1 Potently Reduce Cell Viability", followed by Dr. Silvia Mejia-Arango, faculty of UTRGV, who presented on the "Effect of Alcohol Consumption on Cognitive Decline among Mexican Adults". Finally, Dr. Miroslava Gomez-Garza, and Dr. Noe Garza, from UTRGV, together presented their research work on

"Human Papilloma Viruses Infection and Pre-Malignant Lesions in Women on the Texas Mexico Border". One special topic session was carried out by Dr. John Ronnau, Senior Associate Dean for Community Health Partnerships, UTRGV on the topic of "Understanding the Impacts of Social Context on Health" accompanied by Xavier Duran, Medical Office Manager, Lizette Ingle, Program Coordinator, Miguel Jimenez Mejia, Program Manager, and Karla Soberanis, Program Specialist at UTRGV Academic Health Education Clinics. Dr. Kelsey Baker, Assistant Dean for Pre-Clerkships, Education & Academic Affair from UTRGV, discussed the connection of neuro networks and cancer progression in her talk, "Neuromodulation for Cancer: Where can we go?" followed by Dr. Sue Ann Chew, Associate Professor, UTRGV, who presented her research on "Biomaterial-Based Strategies for the Treatment of Cancer".

At the end of day one, the organizing committee orchestrated a poignant and impactful gathering, the 10th Annual Purple Night, dedicated to shining a spotlight on pancreatic cancer. This annual event, a collaborative effort with the Kosten Foundation, serves as a heartfelt tribute to survivors of pancreatic cancer and the unwavering dedication of caregivers. This year, the organizing committee was focused on commemorating the memory of Ms. Kathryn Craig Gilbert (Kathy), an exceptional individual who bravely battled pancreatic cancer for 11 years. Kathy not only survived the disease but also contributed significantly as a board member of the Kosten Foundation for Pancreatic Cancer Research and as a patient advocate on the National Institute of Health Pancreatic Cancer Task Force.

The 10th Annual Purple Night transcended geographical boundaries through a hybrid format, uniting participants from around the globe. Esteemed pancreatic cancer scientists, clinicians, support groups, survivors, and caregivers all came together for this momentous occasion. Dr. Subhash C. Chauhan set the tone with a keynote lecture delving into early symptoms and clinical insights of pancreatic cancer. Teresa Wright, a survivor and Kosten Foundation support group leader, passionately shared her firsthand perspective on the disease's symptoms and underscored the critical importance of early detection. Dr. Sheema Khan enlightened the audience with the latest advancements in pancreatic cancer research and provided a glimpse into the strides made thus far. The event took on a deeply personal dimension as Kathy's spouse, Dr. Thomas Craig, and sister, Suzanne, recounted their courageous journey and underscored the vital role of caregivers in the battle against cancer.

The evening was further enriched by heartfelt accounts from other survivors and caregivers who candidly shared their personal journey, experiences with symptoms, diagnosis, treatment, and ongoing care. Elizabeth, Rosalie, David, and Sandra Pulliam, Molly Dyer, and Rev. Diann White all added their voices to this tapestry of resilience and hope. As the event ended, attendees came together for dinner, fostering connections and renewing their commitment to the fight against pancreatic cancer. It was an evening filled with inspiration, camaraderie, and a shared determination to make a difference in the lives of those affected by this formidable disease.

The high level of research discussions was continued on day two on February 10, 2024. Dr. Bilal B. Hafeez moderated Session 6 by inviting Dr. Brett Spear, Professor at University of Kentucky, Kentucky for the 5th keynote lecture on the topic of "Tumor Promoting Activity of the Transcription Factor Zhx2 in Hepatocellular Carcinoma". He discussed the role of a transcription factor called

Zinc fingers and homeoboxes 2 (Zhx2) in Liver cancer. Dr. Michael X. Zhu, Professor, Integrative Biology and Pharmacology at The University of Texas Health Science Center at Houston, McGovern Medical School, delivered his invited talk, "Dysfunctional Calcium Signaling in Cutaneous T-cell Lymphoma". He enlightened the audience about the role of Calcium ions ($Ca^{2+}$) which plays a critical role in cell functions ranging from secretion, contraction, to gene expression and programmed cell death. Dr. Edward James Kruse, Surgical Oncologist at UTRGV-SOM, discussed cancer health disparities in detail related to the status of diagnosis and area of improvements in RGV region in his talk, "Cancer in the Rio Grande Valley – Screening Programs and Opportunities". Dr. Subash C. Gupta, Professor, All India Institutes of Medical Sciences, Guwahati, India discussed the "Modulation of Prohibitin, Nuclear Factor-κB and Long Non-coding RNAs by an Isothiocyanate in Breast Cancer Cells". He focused on nutraceutical isothiocyanate which can be derived from cruciferous vegetables, and are rich sources of glucosinolate, a precursor of isothiocyanates, and its anti-cancerous role in breast cancer. A concurrent session was moderated by Dr. Neeraj Chauhan, Assistant Professor, UTRGV. Dr. Shrikanth S. Gadad, Assistant Professor at Texas Tech University Health Sciences Center, El Paso, gave the 8th keynote lecture on "Epigenetic Regulation of Breast Cancer by Nuclear Non-Coding". Followed by an oral talk from Dr. Shabia Shabir Khan, Faculty on the topic of "Revolutionizing Feature Selection: A Breakthrough Approach for Enhanced Accuracy and Reduced Dimensions, with Implications for Early Medical Diagnostics". Dr. Avtar Meena from All India Institutes of Medical Sciences, India, presented her talk on the "Role of TRPV6 in Mitigating Alcohol-Induced Disruption of Tight Junctions, Barrier Function, and Hepatic Injury" where she discussed the impact of alcohol at the molecular level, which may induce hepatic toxicity by damaging the cellular junction driving through TRPV6 disfunction. Finally, Dr. Vivek K. Kashyap, Assistant Professor, UTRGV, presented his research on piperlogumine nano-formulation in pancreatic cancer. Piperlogumine is a bioactive compound derived from black paper, which helps in chemoprevention and reduces the event of pancreatic tumor desmoplasia by modulating tumor immune responses. Oral presentation session 6 was moderated by Dr. Mohammed Sikander, and it began with Dr. Yossef Alsabawi, a medical student from UTRGV, who discussed "The Increasing Prevalence of Cleft Lip with or without Cleft Palate in the Rio Grande Valley of Texas". This was followed by Mr. Miguel Lopez, medical student from UTRGV, who presented two topics: "Birth Defect Trends within Texas Public Health Region 11, 2000-2019: an Analysis of Texas Department of State Health Services Public Data" and "Inflammatory Breast Carcinoma in the Rio Grande Valley: A Case Report". Dr. Lisa Salinas, Clinical Assistant Professor, UTRGV, delivered a talk on "Risk of Food Insecurity Reflects Health Status in Adult Relatives of PreK Children – Data from the STEPS Snap-Ed Research Study". Lastly, Dr. Shikha Sharma, from Amity University, India, discussed the role of AMR Genes Multi-Drug Resistant Escherichia coli Isolated from Potable Water. After a short break, Dr. Murali M. Yallapu moderated the sixth symposium. For the 9th keynote lecture, Dr. Henry C Manning, Professor, Department of Cancer Systems Imaging and Scientific Director, Center for Advanced Biomedical Imaging, The University of Texas MD Anderson Cancer Center, Houston, gave a talk titled, "Access to Radiopharmaceuticals for Imaging and Therapy: the need, current challenges, and prospects for a bright future". Dr. Manning discussed the role of precision imaging diagnostics in precision

medicine; drug development; cellular metabolism; glutamine; molecular imaging biomarkers; oncology; neuroscience; cell signaling; proliferation; cell death; and translocator protein. After that, Dr. Everardo Cobos, Chairman, Department of Medicine and Oncology, ISU, UTRGV-SOM, discussed current developments in the field of hepatocellular and cholangiocarcinoma. Dr. Kokkarachedu Varaprasad, Associate Professor, Universidad San Sebastián, Chile, presented his work on the topic "Biocidal Activity of Hybrid Nanomaterials for Next-generation Applications". Here he discussed advanced nano-formulation that has biocidal activity, which can be used as a potential anticancer formulation. Kanchan Chauhan, Ph.D., Associate Professor, Universidad Nacional Autonoma de Mexico, delivered a talk on the topic of "Biocatalytic Nanoreactors Towards Therapeutic Nano-factories". Meanwhile, two more concurrent sessions were organized: oral presentations 7$^{th}$ and 8$^{th}$ were moderated by Dr. Sheema Khan and Dr. Vivek K Kashyap, respectively. The 7$^{th}$ oral presentation session began with Dr. Manish K. Tripathi, Assistant Professor, UTRGV-SOM, on the topic of "LncRNA MALAT1 as a Novel Stress Related Factor in Hepatocellular Carcinoma". He discussed the important positioning of MALAT1 in liver cancer conditions and compared the expression profiling of MALAT1 with existing liver cancer biomarker panel and its significant role in liver cancer. This was followed by Dr. Bilal B. Hafiz, Assistant Professor, UTRGV-SOM, who discussed the "Clinical significance of targeting ribosome biogenesis in pancreatic cancer therapy". Dr. Hafeez advocated the role of ribosomal biogenesis in cancer progression followed by the impact of ribosomal biogenesis inhibitor in the management of devastating pancreatic cancer conditions. Dr. Martin Ekoumou, UTRGV, discussed the importance of interdisciplinary collaboration in the development of health procedures and protocols. He discussed "Healthcare Professional's Attitudes Towards Interprofessional Collaboration". Tomas Gomez, Jr., Undergraduate Student, UTRGV, explained the role of neurotoxins in Parkinson's disease in his talk on "Exploring Neuroplasticity Changes in Neurotoxin-induced Parkinson's Disease: A Preliminary Analysis using Transcranial Magnetic Stimulation". Lastly, Noah Al-Hassan & Taha Al-Hassan presented the role of microbiota in periodontitis and Alzheimer's disease. In the next concurrent session, Dr. Barbara Malaga-Espinoza, UTRGV Resident, presented her work on "Emergency Total Proctocolectomy in an Uninsured Hispanic Man with Colorectal Adenocarcinoma Secondary to Familial Adenomatous Polyposis", followed by Dr. Shreel H. Patel, UTRGV Resident, who presented three topics: "Little bit about Liddle: Big Improvement in Blood Pressure", "Too Yellow: An Idiopathic Case Of Autoimmune Hemolytic Anemia", and "An Unusual Presentation of the Severe Hypothyroidism Presenting As Shortness Of Breath". Symposium 7 was moderated by Dr. Sheema Khan, and she introduced Dr. Subhash C. Chauhan, who delivered a talk on "Prolonging Socio-psycho Stress in Cancer", in which he enlightened the audience about the role of psychological stress, behavioral pathways, ACTH, adrenalin, and cortisol hormones in immune-suppression and inflammation, which may trigger oncogenesis by activating cell proliferation, cell migration and invasion processes at cellular level. Dr. Diana Resendez Perez, Professor and Investigator at the Universidad Autónoma de Nuevo León, Mexico, discussed the "Novel interaction complexes of homeoproteins and transcriptional factors in the genetic control of development in Drosophila melanogaster", followed by Ms. Cassandra Perez, MPA, Grassroots Manager at the American Cancer Society Cancer

Action Network, based in the Rio Grande Valley, Greater McAllen, who discussed the "Diverse Impact: Empowering Inclusive Community Involvement in Cancer Policy". Lastly, Dr. Mehdi Shakibaei, Professor, Germany, discussed the impact of a famous and very reactive bioactive compound Resveratrol over a tumor suppressor gene p53, and he linked its pharmacological effect with cellular plasticity and apoptosis in colorectal cancer. The 9th oral presentation was moderated by Dr. Swati Dhasmana, UTRGV Postdoctoral Fellow. In this session, Mr. Dikshanta V. Luitel, UTRGV Graduate Student, presented his talk, "Exploring Xenophagy: How Colon Epithelial Cells Combat Intracellular Bacterial Threats", followed by Melina J. Sedano, UTRGV Graduate Student, who discussed "The Role of a Cancer Testis-Antigen in Regulating Tumor Growth and Oncogenic Pathways in Triple-Negative Breast Cancer". Sana Shabir Khan, Graduate Student from the Islamic University of Science and Technology, Awantipora, India, discussed the role of artificial intelligence in improving health and sustainability by mitigation of environmental associated cancer risks. Andrea Dorado Baeza, Graduate Student, UNAM, Mexico, discussed the virus like particles, its characterization and applications. Barbara Yang, Graduate Student, TTUHSC-El Paso, spoke on "The Role of Divergent Noncoding Gene in Triple-Negative Breast Cancer". In the last concurrent session, the 10th Oral presentation was moderated by Dr. Vivek Kashyap, who introduced Dr. Jessica Daza, UTRGV Resident, for her talks, "Chasing Incessant Urinary Tract Infections Results in an Intriguing Case of Myeloma Kidney" and "What Time is it? It is 8-and-a-1/2 Time". A rare case about right medial pontine stroke, right INO, right facial colliculus ischemic stroke consistent with eight-and-a-half syndrome". Dr. Lois Akpati, UTRGV Medical Student, presented "Baclofen Induced Excessive Perspiration; A Case Report", closing with Dr. Liza Salloum, UTRGV Resident, who presented a case on Rosai Dorfman disease with Hodgkin Lymphoma.

One special topic session was led by Dr. Jennifer Cahn, on the theme of "Grant Funding: Current Trends and Best Practices" with panelists Dr. Michelle Le, Beau-Chief Scientific Officer, Cancer Prevention & Research Institute of Texas, Dr. Brett Spear- Professor & Director, SuRE Resource Center, University of Kentucky College of Medicine, and Ms. Tribbie Grimm, Director of Sponsored Programs, UTRGV. This session stood out for its high level of interaction between panelists and the audience. The panelists explored effective grant writing practices and discussed the criteria for evaluating grant proposals. They revealed insights on how to craft compelling grant applications, highlighting the importance of showcasing strong points to capture the consideration of reviewers. Moreover, they provided significant advice to young investigators on topic selection and navigating different grant schemes available to them. Towards the end, the panelists, along with Dr. Jennifer Cahn, featured the importance of a well-crafted bio-sketch in the grant writing process.

## Award ceremony

Dr. Kelsey Baker, hosted the award ceremony during which Dr. Everardo Cobos and Dr. Subhash C. Chauhan presented the awards. Ms. Adhira Tippur received the best poster presentation award under the category of Undergraduate/High School Student Winner for her poster on "La1-xSrxCoO3 Perovskite Nanomaterial: Synthesis, Characterization, and its Biomedical Application". In the same category, Mr. Carlos A Cisneros, Mr. Sumeet Chauhan and Mr. Tomas Gomez received honorable mentions. Ms. Bianca A. Camacho received the Poster Presentation–Graduate Student Winner award, on the topic of

"Investigating Interrater-reliability in Assessing Social Behavior of Monodelphis Domestica". Mr. Ranjit Kumar Das and Mr. Rubén Montalvo Méndez received honorable mentions in this category. Mr. Aun A. Bangash received the award for best Poster Presentation–Medical Student Winner, for "Honey Targets Ribosome Biogenesis Process in Human Pancreatic Cancer Cells to Inhibit their Growth and Metastatic Phenotypes", and Mr. Abhishekh Pokhrel, Mr. Blake Martin, and Ms. Chloe Harris received Honorable Mentions. Mr. Daniel Salinas was the winner of the Poster Presentation–Staff award on the topic of "Assessing Gait Metrics for Early Parkinson's Disease Prediction: A Preliminary Analysis of Underfit Models". Ms. Caroline Puckett received an Honorable Mention in the same category. Dr. Eunbee Cho was the winner for the Poster Presentation–Medical Resident category. Dr. Elimar Gonzalez Morales and Dr. Jian Garcia Cruz received Honorable Mentions in this category. Dr. Rahul Tiwari received the award for best Poster Presentation –Fellow/PostDocs, on the topic of "Nebulization Based Inhalation Nanomedicine for Lung Cancer Treatments", with Dr. Prakhar Sengar receiving Honorable Mention in this category. Dr. Neeraj Chauhan won for best Poster Presentation-Faculty, for her poster, "A Novel Exo-Glow Nano-system for Bioimaging" and Dr. Tuula Klaavuniemi received Honorable Mention. Ms. Yamile Abuchard Anaya received the prize for Poster Presentation–People's Choice Award, on the topic of "Unveiling the Influence of Transcription Factor YB1 in Hepatocellular Carcinoma Cell Lines".

Mr. Tomas Gomez, Jr., received the award for best Oral Presentation under the category of Undergraduate Student on the topic of "Exploring Neuroplasticity Changes in Neurotoxin-induced Parkinson's Disease: A Preliminary Analysis using Transcranial Magnetic Stimulation". Mr. Dikshanta V. Luitel was winner of the Oral Presentation–Graduate Student category on the topic of "Exploring Xenophagy: How Colon Epithelial Cells Combat Intracellular Bacterial Threats". In the same category, Ms. Andrea Dorado Baeza, won on the topic of "Optimization and Characterization of One-step Multi-functionalization of Virus-like Particles for Multimodality Nanoplatforms". Mr. Miguel Lopez and Mr. Andrew Kolodziej both received the award for best oral talk under the category of medical student for their respective topics: "Birth Ddefect Trends within Texas Public Health Region 11, 2000-2019: an analysis of Texas Department of State Health Services Public Data" and "A Rare Encounter: Extracranial Meningioma Mimicking Musculoskeletal Neoplasms". Dr. Anupam Dhasmana won the best Oral Presentation–Staff award on the topic of "CEACAM7 Emerges as a Promising Early Detection Biomarker in Pancreatic Cancer". Dr. Shreel Patel was the winner in the Oral Presentation–Medical Resident category on the topic of "Little Bit about Liddle: Big Improvement in Blood Pressure". Dr. Ryan P. Coll was the winner in the Oral Presentation Fellow/PostDocs category on the topic of "Assessment of Mucin 13 (MUC13) as an Imaging Target for Guiding Colorectal Cancer Treatment: A Pathway Towards Theranostic Development". Dr. Nirakar Sahoo and Dr. Lisa Salinas received best oral talk awards under the category of faculty on the topic of "Targeting Ion Channels in Liver Cancer Cells: Stimulating Lysosomal TRPML1 and Inhibiting hEAG1 Potently Reduce Cell Viability" and "Risk of Food Insecurity Reflects Health Status in Adult Relatives of PreK Children –Data from the STEPS Snap-Ed Research Study", respectively.

## Summary

The UTRGV-SOM hosted the two-day 2nd International Conference on Cancer Health Disparities (ICCHD), which served and the 7th

Annual Research Symposium February 9-10, 2024, in Mission, Texas, USA, implementing a hybrid format that included both in person and digital components. The ICCHD-2024 encompassed six sessions: Session 1. Introduction to the conference, prevention, and eradication of cancer health disparities; Session 2. Cancer cellular and molecular biology; Session 3. Technical presentation on cutting-edge technology applications by scientific companies in cancer biology and disparities ; Session 4. Purple Night: Pancreatic Cancer Awareness Event; Session 5. Poster and oral presentations, and early career investigator talks; and Session 6. An award ceremony and closing remarks. This collective event brought together a diverse network of associates from academia, the community/social workers, and healthcare to address important characteristics of cancer health disparities, through special keynote/invited talks, research showcases, and professional development programs. The success of the ICCHD-2024 was clear in its robust participation, with over 190 delegates hailing from more than eight countries. This triumph was made possible by the commitment and participation of volunteers, UTRGV leadership, support from NIH and CPRIT, as well as contributions from city officials, clinicians, faculty members, researchers, scientists, bioethicists, and other stakeholders.

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## Conflicts of interest

The authors declare no conflict of interest.

## Authors' contributions

A.D., S.D., and M.M.Y. drafted the manuscript. J.T., S.K., E.C., M.M.Y., and S.C.C., participated in review and edition of the manuscript.

## References

El-Serag, H.B., Lau, M., Eschbach, K., Davila, J., and Goodwin, J. (2007). Epidemiology of hepatocellular carcinoma in Hispanics in the United States. Archives of internal medicine *167*, 1983-1989.

El-Serag, H.B., Sardell, R., Thrift, A.P., Kanwal, F., and Miller, P. (2021). Texas Has the Highest Hepatocellular Carcinoma Incidence Rates in the USA. Digestive diseases and sciences *66*, 912-916.

Huo, D., Ikpatt, F., Khramtsov, A., Dangou, J.M., Nanda, R., Dignam, J., Zhang, B., Grushko, T., Zhang, C., Oluwasola, O., *et al.* (2009). Population differences in breast cancer: survey in indigenous African women reveals over-representation of triple-negative breast cancer. Journal of clinical oncology : official journal of the American Society of Clinical Oncology *27*, 4515-4521.

Khan, H., Rasmussen, D., Gabbidon, K., Palle, K., Rafiq, A., Faysel, M., Singh, S., and Reddy, P.H. (2021). Disparities in Breast Cancer Survivors in Rural West Texas. Cancer control : journal of the Moffitt Cancer Center *28*, 10732748211042125.

Minas, T.Z., Kiely, M., Ajao, A., and Ambs, S. (2021). An overview of cancer health disparities: new approaches and insights and why they matter. Carcinogenesis *42*, 2-13.

O'Keefe, E.B., Meltzer, J.P., and Bethea, T.N. (2015). Health disparities and cancer: racial disparities in cancer mortality in the United States, 2000-2010. Frontiers in public health *3*, 51.

Siegel, R.L., Miller, K.D., and Jemal, A. (2020). Cancer statistics, 2020. CA: a cancer journal for clinicians *70*, 7-30.

Vanderpool, R.C., Huang, B., Deng, Y., Bear, T.M., Chen, Q., Johnson, M.F., Paskett, E.D., Robertson, L.B., Young, G.S., and Iachan, R. (2019). Cancer-Related Beliefs and Perceptions in Appalachia: Findings from 3 States. The Journal of rural health : official journal of the American Rural Health Association and the National Rural Health Care Association *35*, 176-188.

Wallace, T.A., Martin, D.N., and Ambs, S. (2011). Interactions among genes, tumor biology and the environment in cancer health disparities: examining the evidence on a national and global scale. Carcinogenesis *32*, 1107-1121.