A **MONTHLY** PERSONALIZED MEDICAL MAGAZINE

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ATGC life

THE PIONEER IN GENETIC TESTING & REPORTING

Precision Oncology

GenepoweRx®
Genetic Science powered by K&H

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OUR PRODUCTS

GenepoweRx TOTAL

The **GenepoweRx Total** is India's first-ever comprehensive health package with Genomic testing for preventive healthcare. A person tested with this gets a personalized health plan based on their genetic information which includes – the their nutrigenomics and fitness profile, a complete list of FDA approved medications and supplements that work best for them, and the inherent health risks and plan to mitigate them. (This includes the right nutritional and fitness plan with appropriate lifestyle recommendations).

OncoRx

OncoRx, a product of GenepoweRx, is a broad companion diagnostic that is clinically and diagnostically validated for all solid tumors. The test is aimed to provide physicians with clinically actionable information to tailor-made targeted therapy to the patients based on the individual genomic profile and the type of cancer. This is powered by FDA approved biomarker information from Memorial Kettering Sloan Cancer Centre's clinical research guidelines.

GenepoweRx PHARMACOGENOMICS

The **GenepoweRx Pharmacogenomics** is a test intended to inform the clinicians and their patients to personalize a drug therapy tailor- made according to the individual's genetic makeup. The test covers hundreds of medications used to treat various medical conditions. Our Pharmacogenomics report debunks the widely popular theory in medical science, 'One Size Fits All'.

OUR OTHER PRODUCTS

GenepoweRx DiabetesCare

GenePoweRx DiabetesCare a DNA based whole exome sequencing and interpretation service to prevent disease and improve diabetes health.

- Helps in the early identification of predisposed conditions, prevention, and treatment of the condition
- Personalized recommendations on lifestyle changes to prevent or delay the onset
- Insights on prevention of multifactorial diseases
- Insights from pharmacogenomics profile which helps to choose right diagnostic drug with least side effects.

GenepoweRx CardiacCare

GenePoweRx CardiacCare a DNA based whole exome sequencing and interpretation service to prevent disease and improve heart health.

- Helps in the identification, prevention and management of the predisposed conditions
- Personalized recommendations on lifestyle changes to prevent or delay the onset
- Insights on other associated triggers, nutrigenomics and fitness profiles.
- Comprehensive pharmacogenomics profile of cardiac care drugs along with anti hypertensive drugs and dyslipidemia drugs respectively

GenepoweRx NephroCare

GenePoweRx NephroCare a DNA based whole exome sequencing and interpretation service to identify predisposed conditions and management to improve kidney health.

- Helps in the prevention, management of the condition
- Personalized recommendations on lifestyle changes to prevent or delay the onset
- Effective disease management with early diagnosis
- Insights on other associated triggers

GenepoweRx PediaHealth

GenePoweRx PediaHealth a DNA based whole exome sequencing and interpretation service for a deeper understanding of your infant's health and disease management of various predisposed conditions.

- Comprehensive understanding of Your kid's DNA & health
- Early diagnosis and timely management of inborn metabolic disorders of early childhood
- Help with undiagnosed genetic condition

GenepoweRx productiveHealth

GenePoweRx ReproductiveHealth a DNA based whole exome sequencing that helps in comprehensive genomic assessment for a deeper understanding of Male and female Reproductive health issues.

GenepoweRx NeuromuscularHealth

GenePoweRx NeuromuscularHealth a DNA based whole exome sequencing to address Dystonia, Neurodegeneration, Polyneuropathy, susceptibility to Scoliosis, myasthenia syndromes and Seizure disorders.

- Risk and chances of progression of neurological disorders including - Parkinson's disease, dementia , myasthenia and seizures
- Risk of rare neurological conditions and spinal muscular dystrophies and atrophies can be understood

GenepoweRx MentalHealth

MentalHealth.me a Comprehensive genomic assessment of Anxiety, Depression, Schizophrenia and pharmacogenomics for optimized treatment and management.

- Comprehensive pharmacogenomics profile of antipsychotics, antidepressants, antianxiety medications which include drug response, side effect profile and dosing.
- Risk and progression of schizophrenia, mood disorders, anxiety (and) depression.

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Precision Oncology: Revolutionizing Cancer Care Through Personalization

Dear ATGC Community,

In the dynamic landscape of healthcare, we find ourselves at the forefront of a transformative era—Precision Oncology. This innovative approach to cancer care integrates advanced technologies, genetic insights, and multidisciplinary collaboration to craft personalized treatment strategies.

Within these pages, we unravel the profound impact of Precision Oncology. From unveiling a new tool that redefines prognosis for lung adenocarcinoma to the exploration of male breast cancer genetics, our journey traverses diverse terrains. We take you inside the realm of clinical trial unit tumor boards, where real-life adventures in a national cancer network showcase the power of collective expertise. A notable highlight is the inspiring story of Dr. Abhijit Bhograj, a true embodiment of dedication in the realm of endocrinology.

As we embrace the spirit of Precision Oncology, we look forward to upcoming scientific events that foster knowledge exchange and fuel our collective commitment to advancing patient care.

Happy reading!

Dr. Hima Challa

Dr. Hima Challa

Director, GenepoweRx

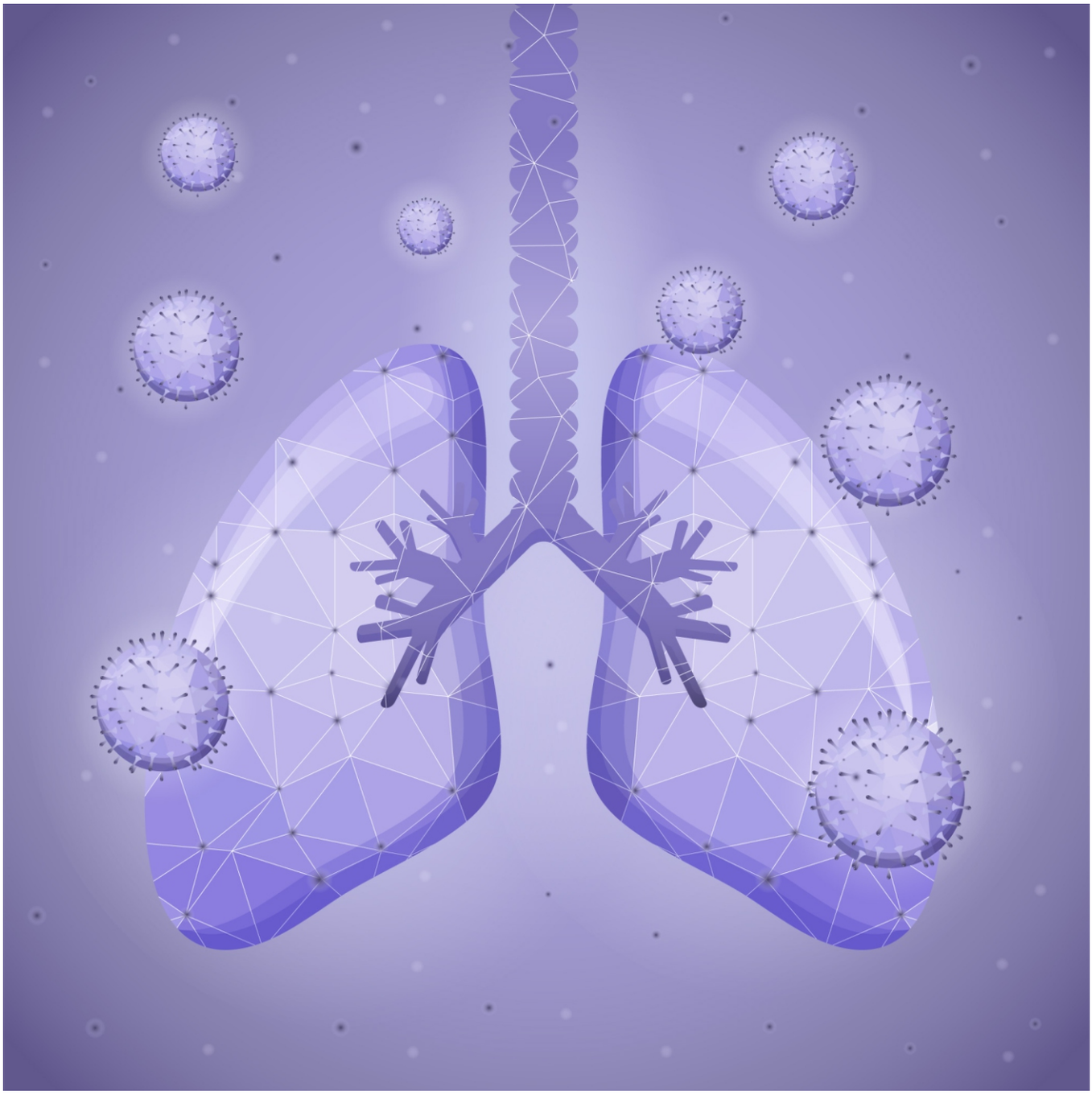
MD FACP, MD in Internal Medicine, USA, Professional Degree in Medical Genomics, Harvard Medical School , Masters in Nutrition Science, Texas Women University,

Founding member of Pharmacogenomics Research Network, Program Director, Internal Medicine residency program, Campbell University

Revolutionizing Prognosis for Lung Adenocarcinoma: A New Tool Unveiled

Transcriptional programs gone awry are a major driver of cancer development, and understanding these regulatory networks is vital to unraveling tumorigenesis. A groundbreaking study centered on human lung adenocarcinoma (LUAD) has brought forth an innovative precision oncology framework called the Lung Cancer Prognostic Regulon Index (LPRI), offering clinicians new insights and potential biomarkers for personalized prognosis. The quest to decode LUAD led researchers to analyze single-cell RNA sequencing data to construct regulatory networks. This remarkable endeavor paved the way for LPRI, a powerful index with the capacity to guide prognosis stratification across LUAD patients. Validation of LPRI yielded promising results, affirming its potential as a reliable prognostic tool.

Intriguingly, LUAD is renowned for its intratumor heterogeneity, which plays a pivotal role in tumor development. With the aid of cutting-edge scRNA-seq data analysis, scientists constructed a single-cell

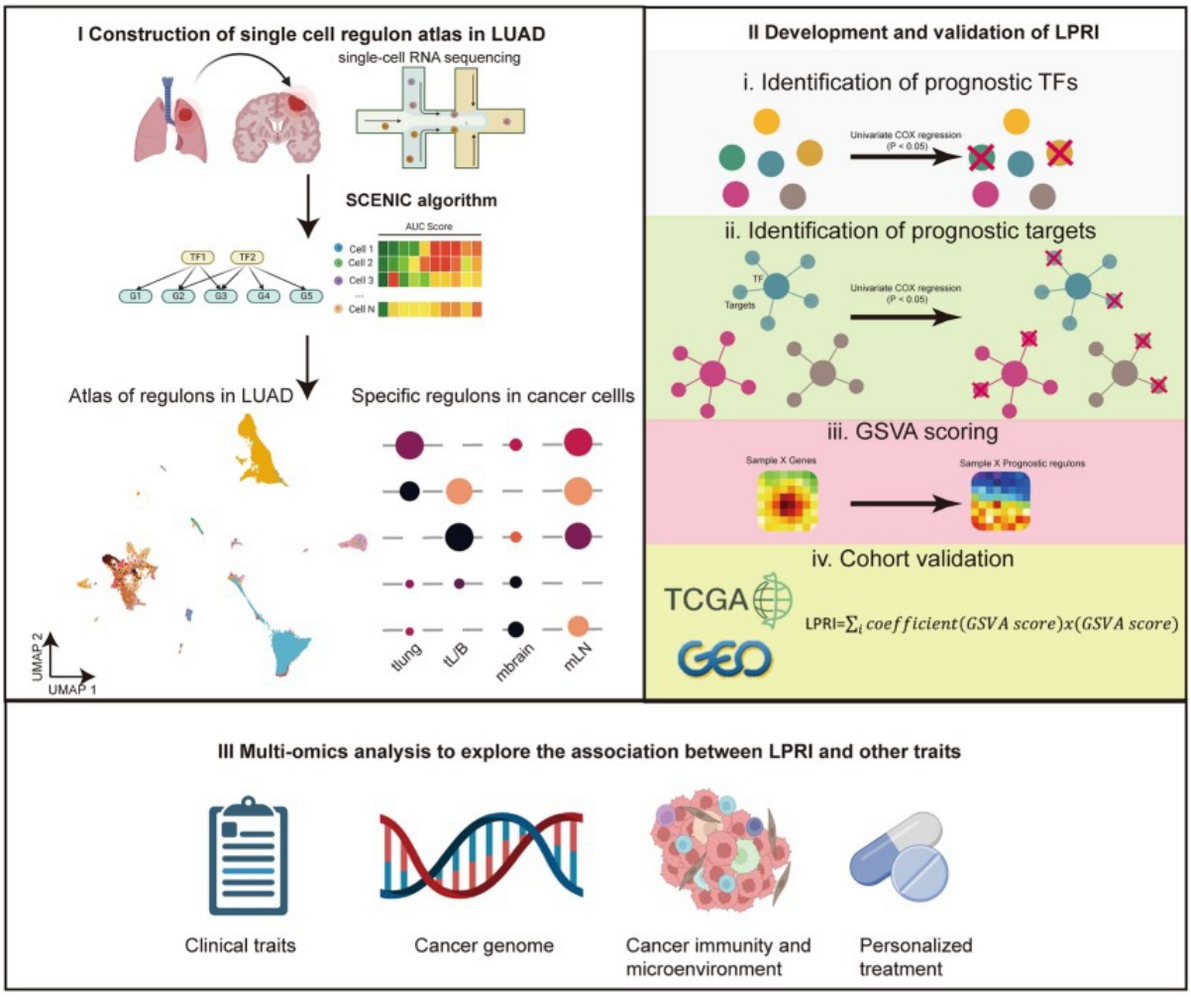


regulatory network for LUAD, spotlighting cell-specific regulatory programs with potential clinical significance. LPRI's development did not stop at the construction of the regulatory networks. Researchers devised an algorithm to extract prognostic-associated regulons from gene expression profiles and single-cell sequencing datasets, enabling personalized patient stratification. Subsequent validation of LPRI in independent datasets added further weight to its potential clinical utility.

Delving deeper, the study conducted a comprehensive analysis of the tumor transcriptome, tumor genome, and tumor microenvironment (TME) in stratified LUAD patients using the TCGA dataset. These findings shed light on significant alterations among different subgroups, offering insights into potential vulnerabilities and personalized treatment avenues. At the core of LPRI lies a collection of 15 prognostic-associated regulons, some of which have been linked to critical roles in lung cancer and other cancer types. Notably, low-risk patient groups showed enrichment in immune processes and immune-related pathways, raising the exciting possibility of LPRI as a predictive indicator for immunotherapy response.

Recognizing the clinical relevance, researchers further identified potential druggable targets and corresponding compounds for LUAD patients. Utilizing advanced molecular docking analysis, they discovered drugs with specific affinity for prognostic transcription factors, holding promise as potential future antitumor treatments. This pioneering study has laid a solid foundation for understanding LUAD's complexity and brings hope for more personalized and effective patient care. LPRI stands as a revolutionary tool, offering clinicians a comprehensive understanding of LUAD's heterogeneity and paving the way for optimized treatment strategies. As further research and validation unfold, this remarkable advancement holds the potential to reshape the landscape of lung adenocarcinoma prognosis and personalized medicine.

Xiong, Y., Zhang, Y., Liu, N., Li, Y., Liu, H., Yang, Q., ... & Li, X. (2023). Integration of single-cell regulon atlas and multi-omics data for prognostic stratification and personalized treatment prediction in human lung adenocarcinoma.



Decoding Male Breast Cancer Genetics - Enhancing Precision Oncology Through Multigene Panel Testing

Breast cancer is the uncontrolled breast cell growth and proliferation found mostly in women, and rare in men -comprising less than 1% of all cancers in men. Next-generation sequencing (NGS) is a modern DNA sequencing technology that acts as a standard therapy for treating a variety of cancers, but only a few studies have been performed to inclusively characterize tumor profiles in MBC and data on specific MBS molecular biomarkers are scarce. The male patients miss new targeted therapies due to scarce MBC molecular biomarkers. Hence further research is needed for better MBC patient care.

What is multigene panel testing?

Multigene panel testing analyzes multiple genes associated with a particular condition or a group of related conditions. It is vital for precision oncology, aiding tailored treatment choices based on patient traits.

It contributes to precision oncology in the following ways:

- Targeted therapy selection: Aids in detecting key genetic changes driving the cancer growth
- Comprehensive genomic profiling: It allows for the simultaneous analysis of numerous cancer-related genes, including oncogenes and tumor suppressor genes.
- Prediction of response to targeted therapies: It aids in the prediction of patients' response to certain treatments. For example, the presence of specific genetic mutations might indicate increased sensitivity or resistance to certain drugs, guiding oncologists in selecting the most suitable treatment option for the patient.

The study

The researchers at the Sapienza University of Rome conducted a retrospective study based on the data obtained from 15 MBC cases between January 2012 and December 2021.

They collected data on the patients' clinical and pathological features such as age at diagnosis, tumor characteristics and genetic information related to breast cancer predisposition genes - BRCA1, BRCA2, and PALB2 and the status of hormone receptors (ER, PR, AR), HER2, and proliferation index (Ki67/MIB1).

They further examined the presence and percentage of immune cells (TILs - stromal tumor infiltrating lymphocytes) in the tumor tissue. DNA extraction and sequencing were performed using the TruSight Oncology 500 panel.

Somatic variants and copy number variations (CNVs) in specific genes associated with cancer

were analyzed and loss of heterozygosity (LOH) was evaluated in cases with germline pathogenic variants.

Furthermore, the researchers evaluated the tumor mutational burden (TMB) and microsatellite instability (MSI) as potential biomarkers. Tumor samples were then categorized as either high-TMB or low-TMB based on a conventional cut-off value of 10 mutations per megabase.

The researchers analyzed the cases and finally found several important characteristics:

- **Genetic Variants:** 24 somatic pathogenic variants genes were found, with the most common being in the PIK3CA gene. 54 genes had copy number gains (CNVs).
- **Tumor-Infiltrating Lymphocytes (TILs):** The majority of MBCs had low TILs.
- **Actionable Targets:** 73.3% of MBCs had significant somatic alteration. Actionable targets included specific PIK3CA alterations, high TMB, and high MSI.
- **PIK3CA Alterations:** Specific PIK3CA alterations were found in 40% of MBCs and are known to predict response to certain inhibitors.
- **High TMB and High MSI:** Two MBCs each, potential immune inhibitor response.
- **BRCA1/2 and PALB2 Variants:** Four MBC cases had gene variants in BRCA1/2 and PALB2 genes, which predict response to PARP inhibitors. One case with biallelic loss of PALB2 also had high TMB.

Overall, the study identified potential actionable targets in MBC and provides valuable insights into the genetic characteristics of these tumors. This approach holds promise for advancing personalized and precise therapies for male breast cancer patients.

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https://www.cdc.gov/cancer/breast/men/index.htm
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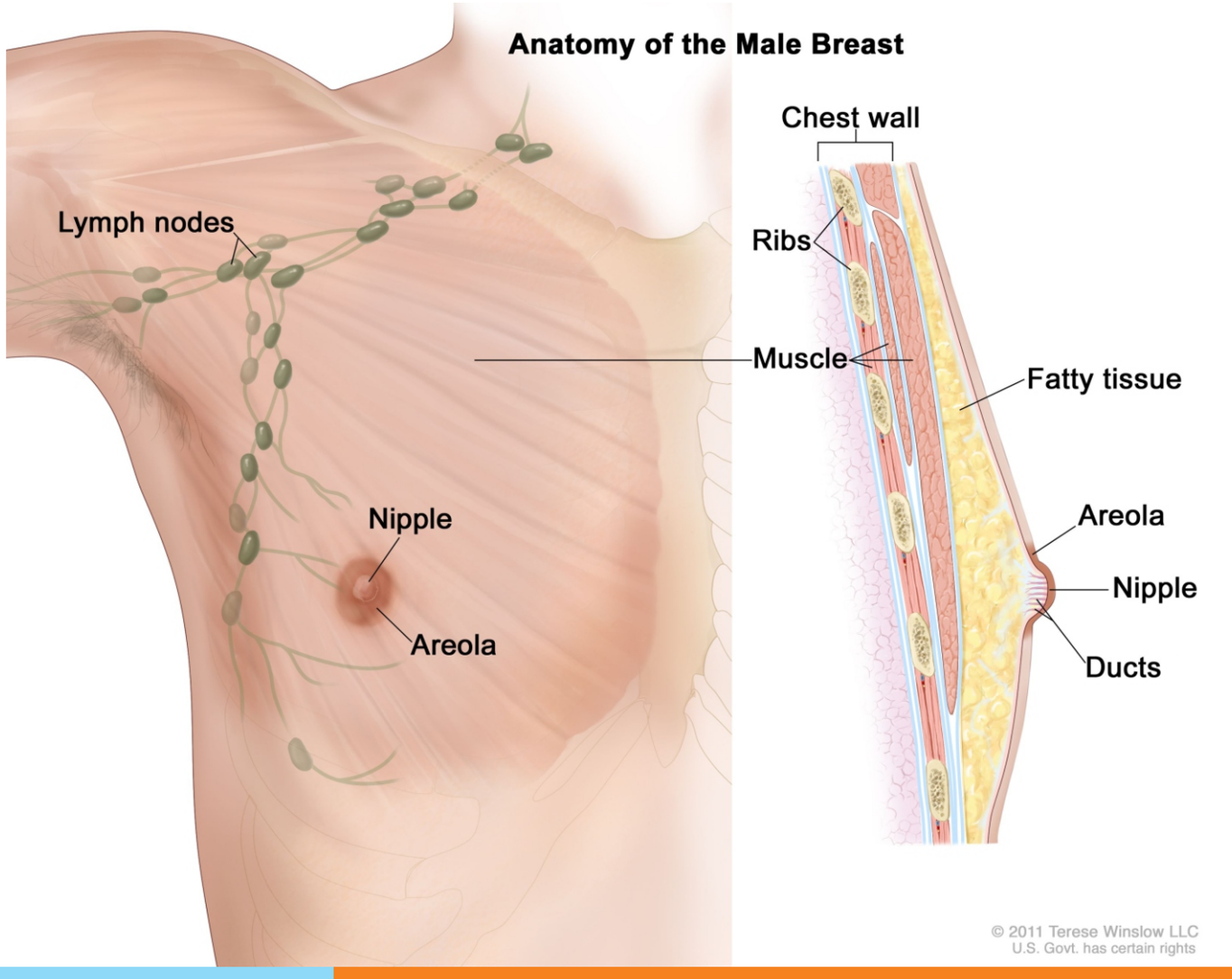

Exploring the Early Clinical Trial Unit Tumour Board:
A Real-Life Adventure in a National Cancer Network

Venturing into the world of medical progress, early clinical trials represent the initial stride towards novel drug therapies. Across six distinguished Bavarian university-affiliated hospitals—Augsburg, Erlangen, Regensburg, Munich (LMU and TU), and Würzburg—an innovative effort has emerged: the creation of a virtual network platform aimed at in-depth patient case discussions.

Unveiling the Approach: The cornerstone of this groundbreaking endeavour is the Virtual Early Clinical Trial Unit Tumour Board (ECTU Tumour Board), a secure web-based gathering point where experts convene to meticulously analyse and evaluate potential avenues for early clinical trials for patients. This digital assembly, involving representatives from local Early Clinical Trial Units (ECTUs), has demonstrated to be a resourceful approach for collectively exploring optimal patient-focused solutions. This retrospective exploration encompasses the period from November 2021 to November 2022, encompassing diverse patient cases and their respective journeys.

A Glimpse into Outcomes: Within this timeframe, an impressive total of 43 patients took centre stage in the ECTU Tumour Board's discussions. The spectrum of these patients' ages varies, with an average age at diagnosis of 44.6 years (ranging from 10 to 76 years). A rich tapestry of medical histories unfolds, as patients underwent a median of 3.7 prior lines of therapies (ranging from 1 to 9 therapies), spanning diverse interventions including systemic treatments, surgeries, and radiation therapy. The array of Tumour types presented is equally diverse, with 27 distinct entities brought to the table for consideration.

Trailblazing Recommendations: The ECTU Tumour Board emerges as a beacon of hope, offering actionable recommendations to navigate the uncharted territory of early clinical trials. An impressive 83.7% (36 out of 43) of patients received at least one trial recommendation, underscoring the potential of innovative therapeutic avenues. These recommendations span an array of 21 active or imminently recruiting clinical trials, encompassing ten antibody trials, four BiTE (bispecific T cell engager) trials, six CAR (chimeric antigen receptor) T-cell trials, and one chemotherapy trial.

Beyond Genetic Frontiers: Intriguingly, only 28.6% of the recommended trials were predicated on comprehensive genetic profiling (CGP). This highlights the prowess of the ECTU Tumour Board, which extends its scope beyond genetic data to chart a more comprehensive route towards patient care and trial engagement.

The Culmination: This initiative is more than just virtual dialogue; it's a tangible network that intertwines expertise from the six Bavarian university hospitals and their associated ECTUs. This endeavour reaches out to a vast landscape of 13 million inhabitants, bridging geographical divides and making innovative clinical trials accessible even to patients in remote locales. Beyond patient presentation, the ECTU Tumour Board acts as a conduit, linking ECTU-sites and fostering collaborative energy among medical minds.

The Path Forward: The journey is ongoing, with patient follow-up constituting an evolving facet. The focus of this vigilance is to track patients' inclusion in early clinical trials and to comprehend the outcomes that shape their medical trajectories. The ECTU Tumour Board stands firm—a testament to the potency of virtual synergies in reshaping patient care and advancing our comprehension of intricate diseases. This initiative serves as a bridge, forging a connection between local Medical Tumour Boards (MTBs) and a variety of clinical trials, thus narrowing gaps and opening avenues for patients seeking clinical trial interventions. The Bavarian-wide diagnostic platform emerges as a pivotal enabler, facilitating collective screening and the implementation of biomarker-driven trial initiatives, promising novel horizons in the ongoing combat against cancer.

Weiss, L., Dorman, K., Boukovala, M., Schwinghammer, F., Jordan, P., Fey, T., ... & Gießen-Jung, C. (2023). Early clinical trial unit tumor board: a real-world experience in a national cancer network. Journal of Cancer Research and Clinical Oncology, 1-8.

A Journey of Dedication: Dr. Abhijit Bhograj's Impactful Story in Endocrinology

In the bustling city of Bangalore, a remarkable individual has dedicated the last 16 years of his life to serving the medical community and improving the lives of countless individuals. Dr. Abhijit Bhograj, a distinguished endocrinologist, stands as a beacon of excellence and compassion in the field of healthcare.

Dr. Bhograj's journey towards becoming a prominent figure in endocrinology began with his unwavering commitment to education and social service. His foundation was laid at JSS Medical College, where he earned his undergraduate degree in Medicine (MBBS). Seeking to delve deeper into his passion for endocrinology, he pursued postgraduate studies and achieved an MD from JSS Medical College, Mysore. Not content with just that, he further specialized in DM Endocrinology from MS Ramaiah, solidifying his expertise in this intricate field. His journey wasn't solely academic; his heart resonated with the plight of the underprivileged, inspiring him to initiate transformative changes in their lives. Through his dedication to social service, he organized over 400 free diabetic camps in T Begur, where he provided vital healthcare and education to thousands affected by diabetes. His tireless efforts didn't stop there; he extended a healing hand to over 3 lakh diabetic patients, offering free treatments that made a profound difference in their lives.

Dr. Bhograj's impact wasn't confined to individual treatments alone. Recognizing the importance of knowledge dissemination, he actively engaged in various Continuing Medical Education (CME) programs, where he shared his expertise with fellow medical professionals. His contributions extended to mentoring aspiring endocrinologists and healthcare practitioners through workshops and interactive sessions, fostering the growth of the medical community. He has championed heart health as well, advocating for the adoption of the "6 Ss" for a healthy heart: Sleep, Stress (No Stress), Smoking (Quit smoking), Spirit (Quit drinking), Salt (minimize salt intake), and Sugar (quit sugar). His expertise and dedication were recognized when he received the ET Doctors Day Inspiring Endocrinologist Award in 2019, an

accolade that aptly reflects his skill set and capacity. Beyond medicine, Dr. Bhograj is known for his sharp intellect and his love for the art of food and dietetics.

Being multilingual, Dr. Bhograj is proficient in four regional languages: Tamil, Telugu, Malayalam, and Kannada. This linguistic versatility has enabled him to extend his services to even the remotest corners of villages, transcending language barriers and social strata. He embodies a cosmopolitan medical practitioner, treating his patients with a blend of expertise, empathy, and a warm smile. Known for his gentle touch in managing complex glandular issues, Dr. Bhograj truly imparts a sweet touch to bitter enzymes. Among the many feathers in his cap, one stands out prominently - the ET Doctors Day Inspiring Endocrinologist Award. His contributions are not just limited to the professional domain; they extend into the realm of public health awareness. His publications touch on a diverse range of topics, catering to both medical professionals and the general public.

Beyond his commitment to patient care and education, Dr. Bhograj embrace innovation. His involvement in technological advancements, particularly in diabetes management, earned him recognition as a pioneer. He co-founded the innovative Sugar diabetes management platform, a revolutionary concept that blended medical acumen with Internet of Things (IoT) sensors. This platform empowered diabetic patients with real-time monitoring and personalized care, allowing them to take charge of their health journey. His dedication and exceptional contributions have not gone unnoticed. He was prominently featured in The Economic Times, celebrated as an inspiring figure in Indian endocrinology. This acknowledgment not only sheds light on his exceptional skills and devotion but also elevates the importance of the field itself.

In a world where healthcare stands as a cornerstone of societal well-being, individuals like Dr. Abhijit Bhograj illuminate the path forward. Through his journey of education, compassion, and innovation, he has not only elevated himself but also raised the standard of care and compassion for all. His story is a testament to the power of dedication and the profound impact one individual can make in the lives of many.

Upcoming Scientific Events

Stay informed about the latest advancements and discoveries in our field by participating in these upcoming scientific events organized by various reputable organizations:

48th Annual Meeting and International Conference of the INDIAN SOCIETY OF HUMAN GENETICS (ISHG 2024)

- Date: January 21-24, 2024
- Location: Ahmedabad
- Website: ishg2024.org

Indian Conference on Bioinformatics 2023 - Inbix'23

- Date: November 24-26, 2023
- Location: VIT, Vellore
- Website: vit.ac.in/school-bio-sciences-technology-sbst/indian-conference-bioinformatics-2023-inbix23-0

Manipal Genetics Update on Cellular and Animal Models for Rare Genetic Disorders

- Organized by: **Department of Medical Genetics at KMC, Manipal and DBT/IA funded Centre for Rare Diseases**
- Date: January 18-24, 2024
- Website: **conference.manipal.edu/MGU7/**

8th International Conference on Stem Cells and Cancer (ICSCC-2023): Proliferation, Differentiation and Apoptosis

- Date: 20-22 December 2023
- Location: JLN Auditorium, AIIMS, New Delhi
- Website: **http://www.icscc.in/**

Mark your calendars and take advantage of these exceptional opportunities to engage with experts, share knowledge, and stay at the forefront of scientific advancements in our field.

Meet the Doctors

Dr Kalyan Uppaluri is the co-founder and the owner of GenepoweRx Personalized medicine clinic and research institute, He did his medical training at the prestigious Gandhi Medical College. He then moved to the United States, where he specialized in Internal Medicine at the McLaren Hospital, Michigan. He also got a degree in Medical Genomics from Ivy league Institute, Stanford University and pursued Cancer research at Wayne State University.

Dr Hima Challa graduated from Gandhi Medical college and was among top few in her batch. She specialized in Internal Medicine at St. Joseph Mercy Oakland, Michigan in United States. She graduated in Medical genomics from the Ivy league Institution of Harvard Medical School. She also holds a master's in nutrition science from the Texas Women University and in integrative medicine from Arizona University.

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