



THK Jain College

A Self financed & Govt. Approved Minority Institution,
Under the Auspices of Shree S.S. Jain Sabha
CU Affiliated, NAAC Accredited; Recognized under Section 2(f) of UGC Act, 1956



A State Level Seminar WORLD CANCER RESEARCH DAY

INVITED LECTURE SESSION AND
POSTER COMPETITION

4th October 2023

Abstracts & Conference Proceedings

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THEME:
**'IMPACT OF CANCER IN LIFE:
AN INSIGHT INTO RESEARCH
AND AWARENESS'**

Organized by:
**Research Committee of
THK Jain College
&
Microbiologists Society, India
(West Bengal Unit)**

Edited by
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A State Level Seminar On
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**Theme
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An Insight into Research and Awareness'**

4th October 2023

Organizing Committee

Research Committee of THK Jain College

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Principal

Convener



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From the President's Desk



Many congratulations for organizing the State level Seminar entitled “Impact of Cancer in Life: An Insight into Research and Awareness” for the observance of ‘World Cancer Research Day’. The presence and deliberation of eminent personalities will surely enlighten faculty members and students with different aspects of cancer research.

I wish the function a great success.

Sohan Raj Singhvi

President,

Governing Body

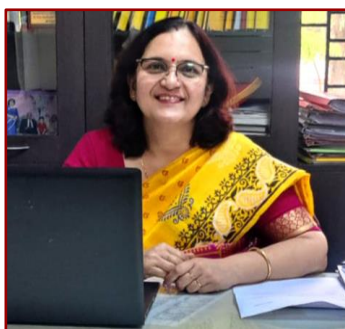
From the Secretary's Desk



This is news of immense happiness and fulfillment that THK Jain College is celebrating World Cancer Research Day on 4 October, 2023 by hosting an exclusive State Level Seminar entitled “Impact of Cancer in Life: An Insight into Research and Awareness”. The event, which is a brainchild of the Research Committee of this college, witnessed active participation of stakeholders from different institutions of repute. I would like to congratulate the Principal and the Research Committee members for taking this initiative to publish conference proceedings.

Lalit Kankaria
Secretary,
Governing Body

From the Principal's Desk



It gives me immense pleasure to present the Abstract and Conference Proceedings of the State Level Seminar “**Impact of Cancer in Life: An Insight into Research and Awareness**” for the observance of ‘World Cancer Research Day’ (that falls on 24th September, every year) held on the 4th of October, 2023. The purpose of this seminar was to share various ideas and topics relating to therapy and awareness of cancer, the most serious concern in recent time. The seminar witnessed the participation of faculty members, students and research scholars from various higher educational institutions. Dr. Susanta Roychoudhury, ICMR Emeritus Scientist, Molecular & Human Genetics Division, IICB, Kolkata and Dr. Urmi Chatterjee, Professor, Department of Zoology, University of Calcutta were the two eminent resource persons and they enlightened us with their highly explicit talks. A Poster Presentation competition, based on important areas of cancer research, was also arranged for the students and research scholars. Overall, the seminar was highly successful.

I express my sincere thanks and gratitude to all the resource persons and contributors. I am thankful to Microbiologists society, India, West Bengal Unit for their kind collaboration. Thanks are also extended to the Convener and other members of the Research Committee of college for their untiring efforts in organizing this seminar. I would like to specially acknowledge Shri Sardarmull Kankaria, President of Shree S.S Jain Sabha and Shri Sohan Raj Singhvi, President Governing Body, for their guidance and encouragement. I would like to make a special mention of the constant support provided by Sri Lalit Kankaria, Secretary, Governing Body, without whom this endeavour would not have been a successful one. Lastly, I also want to thank our non-teaching staff for their active participation and cooperation.

Thank you.

Dr. Mausumi Singh (Sengupta)

Principal

From the Convenor's Desk



The objectives of the Research Committee of THK Jain College is to promote and coordinate multidisciplinary research in the college and also to encourage faculty members to engage in research in their respective fields, thereby enabling them to acquire more knowledge and ideas from the greater world. The institution has always intended to create a conducive environment for promotion of research that creates holistic views.

Cancer, the most serious concern of recent time, can exert profound effects on the emotional health of patients, families, and caregivers. Common feelings during this life-changing experience include anxiety, distress, and depression. It's important to recognize those changes and obtain proper medication when needed.

Considering the complications of cancer, THK Research Committee recently organized a State level Seminar entitled “**Impact of Cancer in Life: An Insight into Research and Awareness**” on 4th October, 2023 for observance of World cancer Research Day (that falls on 24th September, every year). On behalf of the THK Research Committee, I express my immense pleasure for publishing Abstract and Conference proceedings of the Seminar. I heartily acknowledge Shri S.S. Jain Sabha and Governing body, respected Principal Madam and other members of the organizing committee, without whose support this event could not have been organized in a befitting manner. Thank you.

Dr. Anamika Ghatak

Convener,

Research Committee

Program Schedule

Date: 4th October, 2023

TIME	EVENT	VENUE
10:00 -10:45 AM Registration	<ul style="list-style-type: none"> → Registration confirmation of all participants → Distribution of Registration Kit → Submission of Posters for Poster Competition 	Registration Desk at Lobby
Tea Break		
11:00 - 11:15 AM Inauguration	<ul style="list-style-type: none"> → Introduction by Convenor → Lighting of the Lamp → Welcome Address by Dr. Mausumi Singh Sengupta (Principal) → Speech by Shri Sohan Raj Singhvi (President, Governing Body) → Felicitation of the Speakers → Introduction of the Speakers 	Audio Visual Room 2 (AV2)
11:15 AM - 1:00 PM Invited Lectures	<p>Speaker: Dr. Susanta Roychoudhury ICMR Emeritus Scientist Molecular & Human Genetics Division Indian Institute of Chemical Biology Title of the Talk: Precision Oncology: The Future of Cancer Therapy</p> <hr/> <p>Speaker: Dr. Urmi Chatterji Professor Department of Zoology University of Calcutta Title of the Talk: Humble the Hippo- Repurpose Drugs for Cancer Cure</p>	
Lunch Break		
1:45 - 3:15 PM Poster Competition	<ul style="list-style-type: none"> → Poster Presentations by participants → Interaction with Judges 	Multipurpose Hall
3:15 - 4:00 PM Valedictory Session	<ul style="list-style-type: none"> → Declaration of Results for Poster Competition → Vote of Thanks → Distribution of Certificates 	Audio Visual Room 2 (AV2)

Message from the Eminent Speakers



I wish all the success of the State Level Seminar on the 'World Cancer Research Day' organized by the THK Jain College on October 4, 2023. The seminar will help students to update their knowledge on the cutting edge of cancer research. The poster presentation by students will encourage them to showcase their knowledge in the area of cancer research. It is time that college organizes more such science programmes to enlighten its students and help them develop a scientific mind.

Thank you.

Dr. Susanta Roychowdhury

ICMR Emeritus Scientist
Molecular & Human Genetics,
CSIR-Indian Institute of Chemical Biology,
Kolkata, West Bengal, India.



Prof. Urmil Chatterji
Cancer Research Lab

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A state-level seminar celebrating the World Cancer Research Day was organized by the Tara Devi Harakh Chand Kankaria Jain College on 4 October, 2023. The theme of the seminar was *Impact of Cancer in Life: An insight into Research and Awareness*.

The seminar comprised talks by two researchers, followed by poster presentations by scholars and students from several colleges in and around Kolkata. The theme was well represented through the research experiences of the speakers and the poster presentations of the students and scholars. The depth and enthusiasm exhibited by the scholars revealed their concern about this deadly disease that is emerging rampantly in the world. The diversity and hallmarks of the disease, the mechanisms by which the disease is controlled, various treatment approaches and drug repurposing as a plausible therapeutic strategy were deliberated through lecture and discussions.

One aspect of cancer treatment emerged through targeting and obliterating the cancer stem cell population in tumors, which are the major elements behind tumor recurrence in local or distal sites, thereby leading to treatment resistance and poor prognosis in patients. Stemness maintenance genes, like Sox-2, were identified as plausible targets for destroying the cancer stem cells. However, transcription factors like Sox-2 were practically untargetable; hence, indirect means of targeting were investigated. In accordance, components of the Hippo signaling pathway were identified, which could be used to target Sox-2 circuitously. Eventually, repurposed drugs could be used to target the Hippo components and obliterate the cancer stem cells, leading to promising therapy and good prognosis for cancer patients in future.

The seminar was a huge success and I wish all patrons, organizers, participants and delegates the best of health and attainment, for coming together to address the emperor of all maladies!

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ABSTRACTS

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AN OVERVIEW OF NEUROENDOCRINE TUMOURS

Dr. Sritama Mukherjee, Ritwika Mitra, Sneha Bhattacharya, Swagata Singha

Department of Botany, Bethune College, Kolkata

Neuroendocrine neoplasms account for about 0.5% of all newly diagnosed malignancies. The pancreas is the most common primary site of origin for neuroendocrine tumours in India. Genomic profiling is needed to determine the exact genetics of each tumour. They have heterogeneous origins, from skin to gastrointestinal tract, and a complicated histology. Thus, there is an inevitable need for genomic profiling to determine the exact genetics of each tumour for prognosis and treatment strategies to overcome the disease's complexity. For this purpose, next-generation sequencing (NGS) is the most reliable methodology for both germ-line and somatic studies to make a clinical diagnosis. Next-generation sequencing of neuroendocrine tumours undergoing trans-arterial embolization reveals DAXX mutation status that predicts shorter hepatic progression-free survival and time to hepatic progression. Sometimes, NET may develop because of a genetic mutation (also known as a variant) inherited from a parent. EPS1, FH gene, MEN1, MEN2, VHL, NF1, SDHC, or SDHD are some of the genes whose mutation leads to the formation of NETs, each having different sites of action. Current reports also suggest that 68Ga-DOTATATE PET/CT imaging improves the diagnosis and staging of NETs compared with 111In-DTPA-octreotide and conventional imaging. In this review, we would like to raise awareness about the genetic causes, types, and current methods of diagnosis and treatment of neuroendocrine tumours, as they are quite rare and often misunderstood as other forms of cancer.

Keywords: Neuroendocrine Neoplasm, Genomic Profiling, Histology, Next-Generation Sequencing

Abstract 2

**MOLECULAR DOCKING OF MAJOR SECONDARY METABOLITES OF
PTERIS VITTATA L. AGAINST NEONATAL MENINGITIS**

Diya Bhowmick, Ishita Barary, Seemanti Ghosh, Dr. Sritama Mukherjee

Department of Botany, Bethune College, Kolkata

Neonatal meningitis being a severe life-threatening condition primarily affecting newborns needs effective therapeutic interventions. OmpA protein plays the key role in pathogenicity of several Gram-negative bacteria particularly *Klebsiella pneumoniae* thereby initiating the powerful inflammatory response due to which this disease is caused in neonates. *Pteris vittata* L. known for its rich repertoire of secondary metabolites has exhibited promising bioactive properties in various pharmacological studies. Using computational methodologies, we screened a diverse library of secondary metabolites isolated from the fern for their binding affinities and interactions with key molecular targets associated with neonatal meningitis. In the present study, 50 ligands were molecularly docked against the OmpA receptor protein (PDB ID: 7RJJ) of *Klebsiella pneumoniae*, and 9 of these molecules demonstrated good binding scores. *Pteris vittata* L. can thereby provide an alternative natural solution to the side effects of synthetic antibiotics in neonates to combat this multidrug-resistant bacterium.

Keywords: Neonatal Meningitis, Secondary Metabolites, Ligand, Docking

Abstract 3

**FOLK MEDICINE TO TARGETED THERAPY: UNVEILING THE
POTENTIAL OF *CROTON BONPLANDIANUS* LEAF EXTRACT AS AN
ANTI-LEUKEMIC AGENT VIA SURVIVIN PATHWAY MODULATION**

Sweta Kundu, Rangan Mitra, Madhuchhanda Chatterjee, Dr. Avik Acharya Chowdhury

Department of Biosciences, JIS University, Kolkata

From ancient times to the current period, there has been extensive use of folk medicine in the development of drugs to treat various diseases in humans. Most of them have emerged from a range of medicinal plants, and the pure compound obtained from most of the extracts of different plant parts have been found to be very effective against several ailments. *Croton bonplandianus*, a plant having an extensive history of use, has demonstrated its potential as a broad therapeutic agent, and its leaf extract is widely used as an anti-oxidant, anti-hyperglycemic, and anti-inflammatory agent. In this study, we have investigated the bioactivity of *Croton bonplandianus* leaf extracts, demonstrating its ability as an anti-cancer agent against chronic myelogenous leukaemia (CML). The leaf of the plant was extracted using three different solvents, namely acetone, methanol and n-hexane. After evaporating the solvent, the remaining material was dissolved in dimethyl sulfoxide (DMSO). Among these, the acetone extract illustrated remarkable efficacy against the K562 CML cell line. The MTT assay and the Trypan blue dye exclusion assay validated the acetone extract's high cytotoxic action against K562 cells in a dose dependent manner. Flow cytometry analysis using Annexin V-FITC/ PI staining, was in accordance with the above result obtained, indicating the involvement of apoptosis. Western blot analysis revealed that the acetone extract was responsible for the down regulation of survivin protein compared to control. Altogether, the results indicate that *Croton bonplandianus* can be a promising anti-cancer agent, targeting the survivin pathway in CML cells. These findings shed light on this natural resource's therapeutic potential and call for additional research into its active components and underlying mechanism of action, and possibly paving the way for the development of innovative anti-cancer therapies for CML.

Keywords: Anti-Leukemic, CML, Western Blot, Surviving, Therapeutic Potential

Abstract 4

SPICES GIVE THE FLAVOUR OF CANCER TREATMENT

Akshita Singh, Sromona Bhattacharjee, Tomoshree Paul

Department of Microbiology,

Tara Devi Harakh Chand Kankaria Jain College, Kolkata

Cancer as the most notorious disease in the world leads to death, with almost 10 million cases worldwide in 2020. Any investigation to prevent or cure this disease is very important. Traditions around the world have used spices for a large array of activities, from medical treatment to religious practices. Recently there have been studies that suggest spices are not only herbs used in culinary for improving the taste of dishes, they are also sources of numerous bioactive compounds significantly beneficial for health. Spices have been studied widely in several countries to treat different diseases, chemo-therapeutic and chemo-preventive effect of ginger, pepper, rosemary, turmeric, black cumin and clove. Numerous studies have documented the antioxidant, anti-inflammatory and immunomodulatory effects of spices, which might be related to prevention and treatment of several cancers, including lung, liver, breast, stomach, colorectal, cervix, and prostate cancers. Moreover, the mechanism of action for each one of them were figured out such as anti-angiogenesis, antioxidants, altering signalling pathways, induction of cell apoptosis, and cell cycle arrest, for several types of cancer. The most widely used spice in the Mediterranean diet is black pepper (*Piper nigrum* L). Ginger and black cumin have the highest anticancer activity by targeting multiple cancer hallmarks. Apoptosis induction is the most common pathway activated by different spices in Mediterranean diet to inhibit cancer. Beneficial utility of spices to prevent cancer can open a new door for achieving cancer treatment so we can gain knowledge for a better future.

Keywords: Spices, Cancer, Anti-cancer, Antioxidant, Immunomodulatory

Abstract 5

**NANOTECHNOLOGY POWERED QUANTUM PRECISION IN CANCER
THERAPY: THE MARVEL OF WIRELESS MOLECULAR SIGNALLING**

Snehasis Dutta

Department of Zoology, Bangabasi College, Kolkata

Cancer, a pervasive health challenge, demands innovative approaches that provide targeted therapies while minimizing collateral damage to healthy tissue and reducing side effects, ultimately improving patient outcomes. Emerging at the intersection of quantum physics and biotechnology, Wireless Electrical-Molecular Quantum Signalling (WEMQS) offers a promising avenue to address these pressing needs. WEMQS leverages the principles of quantum entanglement and molecular signalling to transmit precise instructions for apoptosis directly to cancer cells. Unlike conventional treatments, WEMQS obviates the necessity for invasive procedures or the use of toxic chemotherapies, presenting a highly specific and minimally invasive alternative. Researchers have developed wireless nano-electrochemical tools, such as gold bipolar nanoelectrodes functionalized with redox-active cytochrome c and a redox mediator zinc porphyrin, referred to as bio-nanoantenna. Studies have demonstrated that remote electrical input modulates electron transport between these redox molecules, facilitating quantum biological tunnelling for electron transfer that selectively triggers apoptosis in patient-derived cancer cells. Transcriptomics data elucidate the unique targeting mechanism of the electric-field-induced bio-nanoantenna, showcasing electrically induced control of molecular signalling. One of the remarkable attributes of WEMQS is its adaptability, allowing for customization to target various cancer types. The specificity of this approach is dictated by the quantum states emitted and the receptors present on the cancer cell surface. By transcending the limitations associated with current therapies, such as chemotherapy and radiation, WEMQS instils newfound hope for patients with otherwise refractory forms of cancer. Through the harmonization of quantum physics and biotechnology, WEMQS offers a precise and minimally invasive means of targeting cancer cells, while minimizing harm to healthy tissues. As further research and development in this field unfold, the promise of a cancer-free future draws nearer, igniting optimism for patients and researchers alike.

Keywords: Bio-nanoantenna, Cancer, Nanotechnology, Wireless Electrical-Molecular Quantum Signalling

Abstract 6

**MOLECULAR CANCER BIOMARKER: AN INSIGHT INTO
CANCER TREATMENT**

Khushboo Mishra, Doyita Poddar, Riddhi Chakraborty

Department of Microbiology,

Tara Devi Harakh Chand Kankaria Jain College, Kolkata

Cancer is a complex and heterogeneous group of diseases characterized by uncontrolled cell growth. It is among the major public health problems worldwide, representing the leading cause of morbidity and mortality in industrialized countries. Early detection and accurate diagnosis are pivotal in improving patient outcomes and tailoring effective treatment strategies. Targeted drugs like biomarkers are often designed to attack cancer cells that have certain gene or protein changes. Biomarker testing is an important part of precision medicine, which is also called personalized medicine. Precision medicine is an approach to medical care in which disease prevention, diagnosis, and treatment are tailored to the genes, proteins, and other substances in your body. There are many types of biomarker tests that can help select cancer treatment. Biomarker tests known as liquid biopsies look in blood or other fluids for biomarkers from cancer cells. In the absence of repeated biopsy and where heterogeneity exists within primary and metastatic sites, non-invasive methods that reflect tumours body-wide should be used. In this case, biomarkers that can be measured in blood or other bodily fluids, e.g., urine, saliva, cyst fluid, ascites, and pleural fluid, could be of great use. One of the most important roles of cancer biomarkers will be to utilize them in widespread screening so that asymptomatic individuals can be detected with disease at a very early stage. Their diversity and utility continue to expand, promising a future where each patient's cancer is comprehensively characterized, and therapeutic choices are optimized for the best possible outcomes. As research in this field advances, cancer biomarkers will remain at the forefront of the fight against this devastating disease.

Keywords: Cancer Biomarker, Liquid Biopsy, Therapeutics

Abstract 7

**COMMELINA VIRGINICA-DERIVED SILVER NANOPARTICLES: A
SCIENTIFIC INSIGHT INTO ANTICANCER ACTION THROUGH
APOPTOSIS MODULATION AND REACTIVE OXYGEN SPECIES
GENERATION IN CHRONIC MYELOGENOUS LEUKEMIA**

Ankita Roy, Prajna Banerjee, Suvodeep Saha, Dr. Suparna Ghosh

Department of Biosciences, JIS University, Kolkata

Medicinal plants offer a wide range of applications in the treatment of numerous disorders, including cancer, and can be used as complementary medications. Phytochemical screenings of *Commelina* plant species have revealed the presence of phenols, sterols, and glycosides, which has made the plant a promising source of novel natural drug. *Commelina virginica* was recognized as a potential choice for anticancer chemical formulation against the chronic myelogenous leukaemia cell line K562. Using silver chloride solution, green synthesis of silver nanoparticles (AgNP) was done using an aqueous extract of *Commelina virginica* leaf. Surprisingly, the aqueous extract of the plant species had little effect on the leukemic cell line, whereas the AgNP had strong cytotoxic effects on K562 cells. Cells were treated with different concentrations of AgNP, and the results of the differential cellular proliferation and viability assays revealed that AgNP has a promising effect on minimizing cancer cell proliferation while being ineffective on normal human PBMC. The presence of cleaved PARP, as detected by western blot, revealed the underlying molecular mechanism driving such an effect, showing the involvement of the apoptotic pathway. We also showed that reactive oxygen species (ROS) are produced in this AgNP-mediated killing mechanism in K562 cells, because significant cellular death reversal was observed when cells were pre-treated with N-acetyl cysteine (NAC), a known antioxidant. These results highlight the anticancer property of *Commelina virginica* through the modulation of the apoptotic pathway, along with the association of ROS.

Keywords: Apoptosis, ROS, Anticancer, Therapeutic Approach, Molecular Pathway, Traditional Medicine.

Abstract 8

**IONIZING RADIATION AND BREAST CANCER: UNRAVELLING THE
ROAD OF TUMORIGENESIS TO MALIGNANCY BY CELLULAR
FACTORS, HORMONES, SIGNALLING PATHWAYS, STEM CELLS AND
PRION PROTEINS**

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Worldwide, ionizing radiation plays a significant role in breast cancer development. Ionizing radiation induces direct and indirect DNA damage, triggering an increase in reactive oxygen and nitrogen species, mutations, genomic instability, bystander effect, proliferation, and inflammation, fostering a feedback loop that promotes breast cancer development. Fibroadenomas, the most common benign breast tumours, arise from the proliferation of milk-secreting glandular cells in response to hormonal changes, primarily during pregnancy. This growth is driven by hormonal imbalances, including elevated levels of oestrogen, progesterone, and insulin-like growth factor-1, as the breast prepares for future lactation. Deregulated signalling pathways, including oestrogen receptors, HER2, Wnt/ β -catenin, PI3K/AKT/mTOR, Notch, and Hedgehog, etc. disrupts normal breast development and helps in breast cancer stem cell formation. Mutations in key genes like BRCA, p53, cell cycle checkpoint, and modification of inflammatory pathways such as TNF α , NF- κ B, IL6, COX2, TGF β , STAT3 etc. drive mammary tumorigenesis. Over expressed cellular prion protein enhances cancer stem cell invasion, metastasis, and resistance to Adriamycin and TRAIL-induced cell death. This intricate interplay underlies the progression from benign tumours to malignancy, offering potential for robust diagnostic and prognostic markers. Breast cancer symptoms include breast lumps, changes in size or appearance, skin alterations, and inverted nipples. Treatment typically involves surgery, followed by chemotherapy, hormone therapy, or radiation, and sometimes chemotherapy prior to surgery. Common side effects are pain, nausea, fatigue, hair loss, and emotional challenges like anxiety and distress. Breast cancer is a leading cause of cancer-related deaths among women. Patients may face psychological issues like body image concerns, intimacy worries, and fear of recurrence, with treatment decisions impacting their emotional well-being, including mood swings and stamina.

Keywords: Ionizing Radiation, Breast Cancer, Signalling Pathways, Tumorigenesis, Malignancy

Abstract 9

**FROM DIAGNOSIS TO HOPE: THE IMPACT OF CANCER,
RESEARCH & AWARENESS**

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Cancer is a widespread and devastating disease characterized by the uncontrolled growth and invasion of abnormal cells, leading to the destruction of healthy tissues. It is a major global health concern and the second-leading cause of death worldwide. Risk factors for cancer include age, lifestyle habits such as smoking and excessive alcohol consumption, genetic predisposition, chronic health conditions, and exposure to environmental carcinogens. Recognizing the signs and symptoms of cancer, such as fatigue, weight changes, skin abnormalities, persistent cough, and unexplained pain, can aid in early detection and treatment. Chemotherapy, a commonly used treatment, involves the use of powerful drugs to kill cancer cells, but it can be costly. Cancer awareness programs aim to educate individuals about prevention, early detection, and available screening programs. Ongoing research focuses on developing innovative therapies, such as immunotherapy and targeted treatments, while genetic testing helps in identifying personalized treatment options and assess familial cancer risks. By promoting awareness, investing in research, and adopting healthy lifestyles, we can strive to reduce the burden of cancer and improve outcomes for affected individuals. Germline testing can help doctors to determine the best treatments for a patient. A new study has compared three formulations of an mRNA vaccine designed to treat cancers caused by human papillomavirus (HPV) infections. Researchers have modified a chemo drug, once abandoned because it caused serious gut side effects, so that it is only triggered in tumours but not normal tissues. After promising results in mice, the drug, DRP-104, is now being tested in a clinical trial. Treatment of cancer is expensive for commoners but there are a lot of clinical trials and extensive research going on to minimize the harmful effect of cancer as well as the cost. Also, awareness of cancer is being spread among people to fight against cancer. People can surely fight against cancer by taking preventive measures such as avoiding smoking, as we all know “If there is a will there's a way”.

Keywords: Predisposition, Chemotherapy, Germline Testing, Innovative Treatment, mRNA Vaccine

Abstract 10

ROLE OF EPIGENETIC REGULATION IN CANCER

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Cancer is a complex and multifaceted disease characterized by uncontrolled cell growth and the ability to evade the body's natural defence mechanisms. While genetic mutations are well-known drivers of cancer, emerging research has illuminated the pivotal role of epigenetics in cancer regulation. Epigenetic modifications, including DNA methylation, histone modifications (such as acetylation, phosphorylation, and ubiquitination) non-coding RNA expression, alterations during metastasis, and chromatin remodelling play a critical role in controlling gene expression without altering the underlying DNA sequence. This abstract explores the intricate relationship between epigenetics and cancer, highlighting how epigenetic changes can lead to the activation of oncogenes and the silencing of tumour suppressor genes. Furthermore, we delve into the concept of epigenetic drift, a phenomenon where normal cells accumulate epigenetic alterations over time, potentially increasing the risk of cancer development. Understanding the epigenetic landscape of cancer has paved the way for innovative targeted therapies aimed at reversing or modifying these epigenetic changes. Our poster provides a concise overview of this fascinating field, shedding light on the silent architects of cancer and the potential for epigenetic-based interventions in cancer treatment.

Keywords: Epigenetics, Oncogenes, Targeted Therapies

Abstract 11

UPSIDE DOWN: BACTERIA IN CANCER TREATMENT

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Cancer is a deadly disease and a disease that is thought to aggravate with time. It is a disease that has already taken the lives of nearly 10 million by the 2020s. The word derived its origin from Latin English which has a literal meaning as, ‘crab’, once cancer invades your body cells, and it’s difficult to get rid of this bodily crab. With ebbing time, cancer treatment has modified ever since, its discovery from cauterization and surgical techniques to radiotherapy and chemotherapy to modern novel strategies like, HAMLET (human alpha-lactalbumin made lethal to tumour cells), telomerase therapy and bacteriotherapy, etc.

One of the novel strategies that are now being widely researched is the use of bacteria for cancer treatment. Bacteria like *Campylobacter jejuni*, *Helicobacter pylori* can cause severe gastric carcinoma. *Chlamydia trachomatis* causes infection to female reproductive organs and thus increases the risk of cervical cancer. *Chlamydia pneumoniae* causes lung cancer and there are many more examples to explore. On the other hand, few bacteria such as *Clostridium butyricum*, *Salmonella spp.*, *Escherichia coli* can induce an inhibitory function on the malignant or benign tumour sites. This novel approach was taken into consideration, due to the Multidrug Resistance (MDR) of the tumour to the initial effectiveness of the chemotherapy; also the chemotherapeutic agents are not tumour-specific thus, destroying the healthy cells causing various side-effects. It is therefore very critical to treat cancerous tumour because of its complex pathophysiology. Thus, bacteria with modified genes are capable of delivering toxins through reporter genes and are used for the treatment of cancer. The genetically modified strains showed capability to activate immune response with an increase in the production of interleukins. Bacteria can be widely used to treat cancer in several ways by using their own components, like bacteriocins, or they can be genetically-modified to code for enzymes that can destroy the tumour, or even they can be used to harbour the chemotherapeutic drugs to the tumour-site just like, a vector. This novel strategy can solve the ever-since problem of cancer treatment by opening wide avenues for research & therapeutic treatment methodologies by using the ubiquitously found microbes in the environment.

Keywords: Telomerase therapy, bacteriotherapy, *Campylobacter jejuni*, MDR

Abstract 12

**PRECISION MEDICINE: TAILORING CANCER THERAPY FOR
BETTER OUTCOME**

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Precision medicine is a synonym for customized medicine approach. It's sometimes called personalized medicine or personalized care. Precision medicine studies a person's gene sequence to understand probability of incidence and spread of cancer, treatment and prognosis with respect to different types of cancer. These results will lead individuals to opt for better and healthy lifestyle, regular screening tests and wholesome awareness to prevent cancer among people specially people at higher risk. This new concept is based upon studying various patient factors like occupation, medical history, and place of residence apart from genetic makeup. Based on these data, patients are identified for clinical trials depending upon the probability of how well they might respond to a given therapy.

Keywords: Precision Medicine, Personalized Care, Prognosis, Therapy

Abstract 13

**ORAL SQUAMOUS CELL CARCINOMA:
RESEARCH AND AWARENESS**

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Oral squamous cell carcinoma (OSCC) is a type of cancer that begins in the squamous cells i.e. the thin, flat cells that form the lining of the oral cavity (mouth) and oropharynx (throat). It is the most common type of oral cancer, with a 5-year survival rate of only 50%. Oral carcinogenesis involves precancerous lesions, invasion, and metastasis, degradation of the cell cycle regulators and the proliferation of malignant cells result in the loss of control mechanisms that ensure the normal function of tissues. The cell of origin of OSCC is the oral keratinocyte. OSCC, as any cancer, is caused by DNA mutation, often spontaneous but increased by exposure to any of a range of mutagens – chemical, physical or microbial. Most OSCC is seen in older males: factors, especially tobacco and alcohol, are the most important mutagens, but betel, radiation exposure, viral infection (Epstein Barr Virus), or immuno-incompetence are relevant in some cases. After Epstein Barr Virus (EBV) infection, many studies have detected EBV DNA in tissues and exfoliated cells from OSCC patients. The expression of functional EBV proteins is implicated in its oncogenicity. The most studied one is the latent membrane protein 1 (LMP-1), a protein associated with the activation of signalling pathways; EBV determined nuclear antigen (EBNA)-1, a protein involved in the regulation of gene expression; and EBV-encoded small non-polyadenylated RNA (EBER)-2. LMP-1 is considered the major oncoprotein, and over-expression of LMP-1 observed in OSCC indicates that this molecule might play a significant role in oral carcinogenesis. Apart from this, overexpression of Cyclin D1, a key cell-cycle regulatory protein that promotes G1/S transition in cells, can lead to uncontrolled proliferation, a hallmark of malignancy and observed in OSCC. According to the statistical data, the persons who smoke < 19 cigarettes /day, have this value ($p=0.0647$). Persons who are alcohol abstainers have $p=0.06$. Thus if we restrain ourselves from tobacco and alcohol then this type of cancer can be prevented.

Keywords: Oral Squamous Cell Carcinoma, Epstein Barr Virus, Latent Membrane Protein 1, Cyclin D1, Awareness.

Abstract 14

**CHEMOPREVENTIVE ANTIOXIDANTS IN ORAL CANCER
PREVENTION**

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Oral cancer is one of the major global threats to public health. India exhibits 20 per 1,00,000 populations suffering from oral cancer which contributes to about 30% of all types of cancer. Oral cancer includes malignant neoplasia which arises on the lip or oral cavity. The successful control of oral cancer will depend on its prevention. Main prevention measures are discontinuing tobacco use and the use of various nutritional agents containing antioxidants. Antioxidants are compounds that inhibit oxidation, a chemical reaction that can produce free radicals that damage DNA, cell membranes and other parts of cells. They prevent development of oral mucosal lesions by neutralizing free radicals by donating their electrons and act as scavengers that may result in oxidative damage to the body. Free radicals are atoms or group of atoms with an odd (unpaired) number of electrons. The free radicals can also cause harmful chain reactions and result in carcinogenesis. Most important antioxidants are vitamin C, vitamin E, beta carotene, lycopene, flavonoids, phenols, lipoic acid which comes from plant based food such as carrots, cranberries, blackberries, blueberries, green leafy vegetables, cocoa, beans etc. They should be consumed liberally. The antioxidants can be endogenous or obtained exogenously as a part of a diet or as dietary supplements. The knowledge of antioxidants is useful in reducing the incidence of oral cancers at the initial stage. The chemo-preventive role of antioxidants in cancer prevention is undeniable.

Keywords: Oral Cancer, Free Radicals, Antioxidants, Oxidation

Abstract 15

**IMPACT OF COLORECTAL CANCER (CRC) IN LIFE: AN INSIGHT
INTO RESEARCH AND AWARENESS**

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Colorectal cancer (CRC) is the third most common diagnosis and second deadliest malignancy for both sexes combined. CRC has both strong environmental associations and genetic risk factors. The incidence of new cases and mortality has been steadily declining for the past years, except for younger adults (younger than 50 years), possibly related to an increase in cancer screening and better therapy modalities. This poster presentation outlines the etiology, epidemiology, clinical staging and stage-wise treatment of colon cancer. Approximately 5% of all CRC are attributed to two inherited syndromes, Familial Adenomatous Polyposis, and Lynch syndrome. The change of the normal colonic epithelium to a precancerous lesion and ultimately an invasive carcinoma requires an accumulation of genetic mutation. Recent evidence has exposed that hamartomatous and serrated polyps could lead to CRC. There are three major molecular pathways linked to CRC, chromosomal instability, mismatch repair, and hypermethylation in a 10 to 15-year period. It affects approximately 135,439 estimated new patients with a corresponding 95,520 (70%) due to CEA in the United States every year. Initial evaluation may involve barium enema or CT colonography, but ultimately a colonoscopy is required for tissue biopsy. Cytokeratin 20 (CK20) and caudal-type homeobox 2 (CDX2) immunohistochemistry (IHC) can accurately identify CRC adenocarcinoma origin, except medullary carcinoma with MSI-H expressing other markers such as calretinin, CK7, SBT2, and CDH17. Although cohort studies have suggested that a diet or exercise regimen may improve outcomes, no prospective randomized trials have confirmed these findings. The cohort studies contained multiple opportunities for unintended bias, and caution is needed when using the data from them.

Keywords: Colorectal Cancer, Carcinoma, Molecular Pathways

Abstract 16

**FINDING AN ANTI-CANCER DIET: HOW NUTRIGENOMICS CAN
HELP BEAT CANCER?**

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Cancer kills one in every six people. Not only is catching cancer difficult, the treatment charges can exhaust the lifetime savings. Current treatment is limited to radiation therapy, chemotherapy, and surgery— all of which come with a hefty cost. Many people cannot afford treatment or cannot continue their treatment for long. Cancer is a disease based on gene mutation and faulty expression, and nutrigenomics holds promise in providing a cheaper and safer option for curing and preventing cancer. Nutrients have been shown to influence gene expression and even induce changes to DNA and protein molecules. In our poster, we will explore the potency of nutrients in modulating gene expression related to cancer hallmarks. We will try to assemble a sustainable diet of Indian food staples that can reduce the risk of cancer in a person or alleviate the symptoms of a cancer patient. We will also explore if certain nutrients can inhibit the altered metabolism (rapid glycolysis, followed by lactic acid fermentation) in cancer cells, a driving force at every stage of cancer development.

Keywords: Nutrigenomics, Gene Expression, Sustainable Diet

Abstract 17

**OVARIAN CANCER AND ITS TREATMENT WITH
NANOTECHNOLOGY**

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In this modern era, cancers are one of those few puzzles that medical science is still searching for answers for. While each cancer type is like a piece of puzzle that needs answers in quite a unique way, there are certain technologies that can change the fate of medical science for good. Among the most effective cancer types, the second most common type of cancer is ovarian cancer, where the malignancy rate is quite high (in countries like: USA, UK, and India) and fatal with mortality rate of 6%. In fact, the chances of the disease are higher where there is more pollution, such as in metropolitan cities. So, the treatment for this type of cancer is of our priority in the immediate vicinity. Therefore, to suppress this disease, scientists have implemented an innovative technology – the Nanomites, or more evidently nanoparticles. These minute or tiny particles are particularly designed in high tech labs in various parts of the world, to transfer certain drugs and medicines directly to the target sites of the damaged organ or area of damage. In this type of treatment, the nanoparticles are targeted to the sites with the help of nanomicelles, liposomes, etc. to destroy the diseased cells of the body but not the healthy cells. As more days are passing by, their biocompatibility and biotoxicity issues are being resolved in the labs. This technology is going to revolutionize the whole concept of disease and change the world for good, and for a better tomorrow, one that escorts us from darkness to light.

Keywords: Ovarian Cancer, Gynaecological Malignancy, Nanomites, Nanomicelles, Liposomes

Abstract 18

p53 AND ITS ROLE IN AGEING AND AGE RELATED DISEASES

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Ageing has been associated with wide changes at the gene expression position in multiple mammalian species. We've used high viscosity oligonucleotide arrays and new statistical styles to identify specific transcriptional classes that may uncover natural processes that play a central part in mammalian aging. Aging in skeletal muscle is characterized by loss of motor neurons, variations in size and type of muscle filaments, infiltration of fat and connective tissue, and an overall drop in muscle mass (sarcopenia). It's kind of a given that utmost conditions increase with age and time. The senescence associated secretory phenotype (SASP) promotes complaint in the aged population. Targeting ancient cells by means of junking, modulation of SASP, or through cellular reprogramming, represents a new remedial avenue for treating cancer and age related conditions similar as neurodegeneration, pulmonary fibrosis, and renal complaint. Cellular anility is incompletely regulated by the TP53 gene, a critical excrescence suppressor gene which encodes or further p53 protein isoforms. The p53 isoforms are produced through inauguration at indispensable transcriptional and translational launch spots and volition mRNA splicing. These abbreviated p53 isoform proteins are endogenously expressed in normal mortal cells and maintain important functional places, including modulation of full- length p53 (FLp53) - intermediated cellular anility, apoptosis and DNA form. The p53 tumour suppressor is actuated by multitudinous stressors to induce apoptosis, cell cycle arrest, or anility. A trial in mice regarding a deletion mutation in the p53 gene that would express a truncated RNA was performed and the data suggests that p53 has an active part in regulating organismal ageing.

Keywords: Oligonucleotide Array, p53, Senescence, SASP

Abstract 19

ROLE OF TELOMERASE INHIBITOR IN CANCER THERAPEUTICS

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Through years of necessary research approaches, cancer remains a major cause of mortality. Telomerase, a reverse transcriptase enzyme, has been considered as the primary factor in every cancer cell, which is principally responsible for regulating the telomere length. Thus, telomerase ensures infinite cell proliferation during malignancy, a hallmark of cancer and this characteristic cell proliferation feature has proved telomerase as the preferred target for drug development in cancer therapy. Telomerase inhibitors stem from the urgent need for novel and effective cancer treatments. Telomerase inhibitors offer a unique approach by specifically inhibiting the enzyme responsible for immortalizing cancer cells, potentially leading to more targeted and less cytotoxicity. Telomerase inhibitors such as BIBR1532, GRN163L, AZT results in shortening the length of telomere and promotes apoptosis or senescence by blocking hTR or hTERT. Besides natural resources, immunotherapy and oncolytic viral therapy are promising approaches, though very few are successful in preclinical and clinical trials.

Keywords: Telomerase, Telomere, Cell Proliferation, Apoptosis, Immunotherapy

Abstract 20

THE ROLE OF POINT MUTATION IN CANCER PROGRESSION

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Cancer is a complicated and devastating disease characterized by uncontrolled cell growth and genetic instability. Point mutations, the smallest genetic alterations, play a pivotal role in driving cancer progression. In this abstract we will explore the significance of point mutations in cancer development. The c-ras oncogene may change from its inactive proto-oncogene state to an active oncogene state due to a single point mutation (base substitution) at its 12th or 61st codon. Point mutations can inactivate tumour suppressor genes, which normally prevent excessive cell growth. As a result, there is disruptive cell signalling, unchecked proliferation, and evasion of cell death mechanisms which ultimately contributes to tumour initiation and progression. Modern cancer treatment involves a multidisciplinary approach, combining surgery, chemotherapy, radiation therapy, targeted therapy, immunotherapy, artificial intelligence and nano-medicines to combat cancer. It's important to note that not all point mutations lead to cancer, and the specific genes involved can vary depending on the type of cancer.

Keywords: Mutation, c-ras Oncogene, Proto-Oncogene, Chemotherapy

Abstract 21

TARGETING p53 FOR THE TREATMENT OF CANCER

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p53, also known as tumour protein P53 (TP53), is a regulatory protein that acts as a critical sensor of cellular stress in multicellular organisms and is a pivotal tumour suppressor in humans. All p53 protein family members have a domain structure and are expressed in isoforms. TP53 gene encodes proteins that bind to DNA and regulate gene expression to prevent mutations of the genome and hence p53 has been described as “the guardian of the genome.” Therefore, if the TP53 gene is damaged, tumour suppression is severely compromised.

Dysfunction of the TP53 tumour suppressor gene is very frequent in cancer. Two principal mechanisms are responsible for this dysfunction: mutation and down regulation of wild-type p53 mediated by MDM2/MDM4. Because of its almost universal inactivation in malignancy, p53 is a highly attractive target for the development of new anticancer drugs. Although multiple strategies have been investigated for targeting dysfunctional p53 for cancer treatment, only two of these have so far yielded compounds for testing in clinical trials. These strategies include the identification of compounds for reactivating the mutant form of p53 back to its wild-type form and compounds for inhibiting the interaction between wild-type p53 and MDM2/MDM4. Two such mutant p53-reactivating compounds have progressed to clinical trials: APR-246 and COTI-2. This study aims to take a deeper look into the mentioned strategies and their feasibility in the foreseeable future. Should any of the compounds currently being evaluated in clinical trials be shown to have efficacy, it is likely to usher us in a new era of cancer treatment.

Keywords: p53, Mutation, MDM2/MDM4, Cancer Treatment

Abstract 22

**WHO SAYS MANGROVES CAN ONLY SAVE US FROM NATURAL
CALAMITY? AN ENDEAVOUR TO EXPLORE IT'S POTENTIAL ANTI-
CANCER ACTIVITY**

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The incidence of antibacterial resistance and colon cancer is increasing in India. Antibacterial resistance and chemoresistance demand the need of developing herbal or natural chemotherapeutic agents. Our study thus, aims to determine the antibacterial and anticancer activities of the leaf extracts of the mangrove *Excoecaria agallocha*. Liquid chromatography–mass spectroscopy analysis of the ethanolic *E. agallocha* extracts revealed the presence of Bergenin. The plant extract fraction containing Bergenin had potent antibacterial action against a resistant strain of *Salmonella typhi* with an MIC value of 15.7 ± 0.04 $\mu\text{g/mL}$. Treatment of the bacteria with the plant extract made it moderately susceptible to the antibacterial drugs ampicillin, aztreonam, cefotaxime, chloramphenicol and imipenem. The plant extract caused membrane damage and disrupted the expression of a 33 kDa outer membrane protein (OmpA) in *S. typhi*. It was plausibly due to this mechanism of the plant extract that made the bacteria susceptible to the antibacterial drugs to a certain extent. Further, fluorescence microscopy analysis revealed the anticancer property of the extract against a human colon cancer (DLD-1) cell line by activation of Caspase-3 followed by subsequent apoptosis and exhibited cytotoxicity against the cancerous cell line with an IC₅₀ value of 17.99 ± 1.12 $\mu\text{g/mL}$. Caspase-3 activity was observed to increase in a dose-dependent manner as determined by spectrophotometric assays. Moreover, the expression of the metalloproteinase-7 (MMP-7) was significantly reduced in plant extract treated DLD-1 colon cancer cells. The results indicate that *E. agallocha* is a novel source of Bergenin, and the plant extract fraction under study may be used in combination therapy along with antibacterial drugs to combat antibacterial resistance of *S. typhi* and also to alleviate the risks of colon cancers in humans. However, further investigations may be undertaken for its therapeutic application and to explore its potential bioactivity against other bacterial strains and human cancer cell lines.

Keywords: Antibacterial Resistance, Bergenin, Caspase-3, Colon Cancer, *Excoecaria agallocha*, Mangrove, *Salmonella typhi*

Abstract 23

**IMPACT OF CANCER IN LIFE: AN INSIGHT INTO
RESEARCH AND AWARENESS**

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Cancer is a large group of diseases that is the second leading cause of death globally, accounting for an estimated 9.6 million deaths, or 1 in 6 deaths, according to the data of 2018. The cancer burden continues to grow globally, exerting tremendous physical, emotional and financial strain on individuals, families, communities and health systems. Large numbers of cancer patients globally do not have access to timely quality diagnosis and treatment. In countries where health systems are strong, survival rates of many types of cancers are improving, thanks to accessible early detection, quality treatment and survivorship care. Since the last few decades, multiple research programmes have been running on this ground which has opened up many new fields where scientists have entered into an era of new research.

The theme of the poster “Impact of Cancer in Life: An Insight into Research and Awareness” presents an approach towards understanding the impact of cancer on the life of patients as well as their closed ones. In the beginning a brief introduction to cancer and its types and causes have been provided which will help to get a better concept about the disease. Three kinds of impacts have been displayed: physical impact on the patient, psychological and economic devastation that cancer brings upon the family members and the victim. The poster also throws light upon the recent developments in cancer research that are going on around the globe including the research on immunotherapy, organoids and many more. It also provides a compact but vivid idea on the diagnostic developments related to cancer which are better and more effective. Cancer awareness is the key to early detection and better health-seeking behaviour. A section of the poster also upholds the awareness among the population so that poor awareness may not lead to poor uptake of screening modalities and delay in diagnosis which can cause a delay in seeking help for cancer-like symptoms. Therefore, awareness about cancer is one of the major parts of this work. This poster will be helpful in the successful implementation of health programmes related to cancer.

Keywords: Impact of Cancer, Diagnostic Developments, Awareness

Abstract 24

**AN INSIGHT INTO ARTIFICIAL INTELLIGENCE IN CANCER
RESEARCH: OPPORTUNITIES AND CURRENT CAPABILITIES**

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Cancer is a leading cause of morbidity and mortality worldwide. Artificial intelligence (AI), which is used to predict and automate many cancers, has emerged as a promising option for improving healthcare accuracy and patient outcomes. AI applications in oncology include risk assessment, early diagnosis, patient prognosis estimation, and treatment selection based on deep knowledge. Machine learning (ML), a subset of AI that enables computers to learn from training data, has been highly effective at predicting various types of cancer, including breast, brain, lung, liver, and prostate cancer. In fact, AI and ML have demonstrated greater accuracy in predicting cancer than clinicians. AI-based systems can help pathologists in diagnosing cancer more accurately and consistently, reducing the case error rates. Predictive-AI models can estimate the likelihood for a person to get cancer by identifying the risk factors. Big data, together with AI, can enable medical experts to develop customized treatments for cancer patients. The side effects from this kind of customized therapy will be less severe in comparison with the generalized therapies. The future of medical guidance will move toward speedier mapping of a new treatment for each individual through clinical applications of AI and machine learning (ML) in cancer diagnosis and treatment. Researchers may work together in real-time and share information digitally with AI to possibly treat millions of people. Applications are in various stages of development across the cancer continuum and in multidisciplinary practice, and some algorithms and advanced clinical decision support systems are demonstrating capabilities that are equivalent to or that surpass expert intervention. Artificial intelligence in oncology is no longer hypothetical. The future of precision oncology, in which living databases of multimodal data types are recursively used to improve clinical models, may yield unprecedented patient outcomes. However, the adoption of AI models into cancer practice should be evidence-based, so that they result in reduced morbidity and mortality and/or in similar clinical outcomes achieved more efficiently or less expensively.

Keywords: Prognosis, Multimodal Data Types, Precision Oncology, Cancer Therapy

Abstract 25

**MOSQUITOES, INFECTIOUS DISEASES AND CANCER –
AN UNSUSPECTED CONNECTION**

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Mosquitoes serve as vectors for viruses, protozoa and bacteria and represent a global public health problem. Although, possible connection between mosquitoes and cancer has been studied, limited evidence on this topic is observed. Relevant information had been critically discussed and grouped under four hypotheses. As stated by the first hypothesis, the infection of mosquito-vectored parasites, especially *Plasmodium* spp., might lead to cancer. According to the International Agency for Research on Cancer, being infected by *P. falciparum* malaria in holoendemic areas is probable to be carcinogenic to humans since the Epstein-Barr virus that leads to Burkitt lymphoma, gets reactivated by *P. falciparum* infection. Burkitt lymphoma is a highly aggressive B-cell non-Hodgkin lymphoma (NHL) where B-cells become the primary targets of Epstein-Barr virus infection. *P. falciparum* enhances the oncogenic effects of EBV on the B-cells. Second hypothesis stated that cancer could be spread directly through mosquito-bites, although there is no such plausible mechanism for the cells developing cancer into the new host. According to the third hypothesis, mosquito bites may lead to hypersensitivity that can result in cancer. Mosquito bites stimulate hypersensitivity which links allergy, oncogenesis and EBV, causing Burkitt lymphoma. An argument based on the aforementioned hypotheses gave rise to the fourth hypothesis which states that pathogens transmitted by mosquitoes may be carcinogenic. The connection of pathogens and cancer needs to be determined urgently as this connection could have strong impacts on the prevention strategies. This will promote multidisciplinary research and discussion to achieve the best health for humans, animals and the environment.

Keywords: *Plasmodium* spp., Cancer, Burkitt Lymphoma, Hypersensitivity

Abstract 26

**SILVER NANOPARTICLES DERIVED FROM *CELTIS TETRANDBRA*
TRIGGER APOPTOSIS IN K562 CHRONIC MYELOGENOUS
LEUKAEMIA CELLS: A HOLISTIC THERAPEUTIC APPROACH**

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Chronic Myelogenous Leukaemia (CML) is a potentially lethal form of cancer characterized by uncontrolled growth of abnormal white blood cells. Exploring alternative medicines beyond traditional chemotherapy and radiotherapy is essential to mitigate the side effects, enhance treatment efficacy, and address the limitations of conventional approaches in managing CML. Thus, the search of potential complementary medicine brings forth the potency of certain medicinal plants, like *Celtis tetrandra*, into limelight. Compounds such as flavonoids, saponins, phenols, sterols, and glycosides have been identified in the *Celtis tetrandra* plant by phytochemical screening, making it a promising option for natural medicine development. Green synthesis of silver nanoparticles (AgNPs) was accomplished using an aqueous extract of *Celtis tetrandra* leaf, as demonstrated by UV-Vis spectrophotometric measurement. Although the ethanolic and aqueous extracts of *Celtis tetrandra* exhibited very little to no cytotoxic impact on K562 CML cells, AgNPs demonstrated strong cytotoxicity, as determined by cellular proliferation and viability assays. Furthermore, when leukemic cells were treated with AgNPs, enhanced expression levels of cleaved PARP and cleaved caspase 3 revealed the involvement of apoptosis, emphasizing on the curative potential of such compounds. Flow cytometry analysis using Annexin-V/Propidium iodide enabled to quantify the number of apoptotic cells at different concentrations, reinforcing *Celtis tetrandra*'s apoptosis inducing capacity in AgNP-treated K562 CML cells. Future research will provide insight into the molecular mechanisms of apoptosis, decode the intricate networking cascades, and highlight the medicinal value of *Celtis tetrandra* as a strong anticancer drug.

Keywords: Nanoparticles, Anticancer, Cytotoxicity, Apoptosis, Cancer Therapeutics, Green Synthesis

Abstract 27

**IMPACT OF HUMAN PAPILLOMAVIRUS (HPV) IN LIFE: AN INSIGHT
INTO RESEARCH & AWARENESS**

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Human Papilloma Viruses (HPV's) are the etiological agents of cervical and different anogenital malignancies. Over 100 different kinds of HPVs are familiar up to now, having circular, double-stranded viral genome is approximately 8-kb in length and each one targeting epithelial tissues for infection. One-third of varieties specifically infect the genital tract. There are 2 groups of HPVs: (1) low-risk HPV types that can lead to genital warts, and (2) high-risk HPV types that are involved in HPV-associated oncogenesis. This imparts an increasingly interdisciplinary medical challenge. In this poster presentation, HPV-associated diseases, prevalence, prevention, and treatments are shown. HPV is the name of a group of 200 known viruses. They are not so concerning in most people, but infection involving high-risk type is common and induce benign hyperproliferative lesions or sex organ warts. HPV infection causes about 5% of all cancers worldwide, with an estimated 625,600 women and 69,400 men getting HPV-related cancer each year. HPV affects the basal cells of stratified epithelia. It then establishes their genomes as a multicopy nuclear episome. In the cells, viral DNA is replicated in conjunction with cellular chromosomes. For extra-genital manifestation, there is still no definite successful treatment; in fact there is no structured early detection program. Meanwhile, studies on HPV vaccines confirm that they should be used for the primary prevention of HPV-dependent diseases. The detection of HPV-related condylomata occurs macroscopically in women & men, and diagnosis of the precursors of cervical carcinoma in women is possible by Pap smear. However, we need more research to find out the real pros and cons of HPV vaccines.

Keywords: Anogenital, Oncogenesis, Hyperproliferative Lesions, Episome, Condylomata

Abstract 28

**CANCER STEM CELL MAINTENANCE AND HIPPO SIGNALLING
CROSSTALK- A POSSIBLE TARGET FOR THERAPEUTIC REMEDIES**

Dr. Avinaba Mukherjee, Tapomita Ghosh, Moumi Ghosal

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Nowadays, cancer is a leading cause of death and is an increasing medical burden worldwide. Metastatic cancer cells usually cannot be eliminated by traditional therapies, and recurrence in these cases is highly likely. Drug resistance limits the efficacies, and research is being conducted to develop effective treatments with low or no toxicity. Such resistance is being developed due to the stemness property of the cancer cell population (CSC). Stem-like cancer cell subpopulations are notorious for expressing stemness genes, self-renewing, differentiating into other non-stem cancer cells, and resisting traditional cancer treatments. The origin of CSCs is still under debate;

One theory believes that CSCs arise from normal stem/progenitor cells which undergo hyperproliferation affected by a particular genetic mutation. An alternative approach for the origin of CSCs suggests that the dysregulation of normal stem cells or from a more specialized population that acquired the ability to self-renew is termed stem cell plasticity. On the other hand, the Hippo signalling pathway, consisting of a highly conserved kinase cascade (Mst and Lats) and downstream transcription coactivators (YAP and TAZ), plays a crucial role in tissue homeostasis and organ size control by regulating tissue-specific stem cells. In the case of cancer, dysregulation of Hippo signalling through the hyperactivity of YAP/TAZ promotes the maintenance of cancer stemness and helps in the reappearance of the tumour even after being operated. Therefore, drug targeting to destabilize this cross-talk regulation of hippo signalling and stemness maintenance can lower tumorigenesis. However, further research should be done in raising this target-specific therapy as a definite anticancer therapy.

Keywords: Cancer Stem Cell, Drug Resistance, Metastasis, Hippo Signalling, Cancer Therapy

Abstract 29

CERVICAL CANCER BREAKTHROUGH: UNVEILING THE ANTI-CANCER POTENTIAL OF *EXCOECARIA AGALLOCHA* LEAF EXTRACT AND EXPLORING ITS MECHANISM OF ACTION

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Development of novel approaches for cervical cancer therapy, sparing healthy normal cells overcoming the limitations of prevailing therapies is of prime importance. Mangroves constitute a significant repository of medicinally important plants. In this investigation, anticancer activity of the mangrove *Excoecaria agallocha* L. leaf extracts on human cervical cancer (SiHa HPV 16+) cell line with subsequent characterization of the bioactive compounds conferring the anticancer activity and the probable underlying mechanism of action of the purified plant extract was studied. The plant extract exhibited selective toxicity against SiHa cells with an IC₅₀ value of 15.538±0.577 µg/mL, while it had no cytotoxic effect on normal healthy human peripheral blood mononuclear cells. Spectroscopic analysis led to the structure elucidation and identification of a few pharmacologically important compounds, with Bergenin being present in the highest abundance. The GFP-dgn in SiHa cells was remarkably protected from proteasomal degradation that might upregulate the survivability of the cells significantly. Flow cytometry followed by Western blot analysis further asserted the ability of the plant extract fraction to cause cell cycle arrest of SiHa cells in the G₂/M phase by significantly reducing protein expression levels of cyclin B1 and D1, decreasing Cdc2 level and simultaneously increasing p21 and p53 levels. Conclusively, it could be inferred that the aqueous extract of *E. agallocha* remarkably decreased the proliferation of SiHa cervical cancer cells.

Keywords: Apoptosis, Bergenin, Cervical Cancer, Cytotoxic, *Excoecaria agallocha*.

Abstract 30

**NANO-INNOVATIONS: REVOLUTIONIZING CANCER CARE FOR
A BETTER TOMORROW**

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Cancer endures as a paramount global health challenge, demanding an unceasing commitment to innovation in both diagnosis and treatment. Recently, nanotechnology has emerged as a beacon of hope in the realm of oncology research. This revolution hinges on the remarkable precision offered by the manipulation of materials at the nanoscale. Scientists can engineer nanoparticles and nanocarriers to target cancer cells with exceptional accuracy, significantly reducing collateral damage to surrounding healthy tissue. These tiny but powerful agents serve a dual role, functioning as early diagnostic tools and therapeutic vehicles for delivering drugs and therapies directly to the heart of tumours. Furthermore, the era of personalized medicine and theranostic approaches has been ushered in by nanotechnology, offering tailored treatments based on an individual's unique genetic or molecular profile. Nanoscale delivery systems have fortified immunotherapy effectiveness. As research in this sphere advances, the potential of cancer nanotechnology gleams ever more brightly, nurturing renewed optimism for minimally invasive, bespoke interventions with unmatched precision primed to significantly improve patient outcomes worldwide.

Keywords: Nanotechnology, Nanocarriers, Cancer, Immunotherapy

Abstract 31

**UNVEILING THE IMPACT OF CANCER: ADVANCING BRAINSTEM
GLIOMA RESEARCH THROUGH NANOTECHNOLOGY,
IMMUNOTHERAPY AND CRISPR-CAS REVOLUTION**

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Brainstem glioma challenging brain cancer mostly affects essential processes and is characterized by the rapid growth of tumours from brain progenitor or glial cells. Due to its position in the brainstem, treatment is challenging and frequently results in a poor prognosis, particularly in younger patients. The location and intricacy of traditional techniques such as radiation, chemotherapy, and surgery limit their effectiveness. Recent evidence suggests the potential of cutting-edge therapies like Nanotechnology, Immunotherapy, and CRISPR-Cas System, to combat cancers like brainstem glioma which has a very high mortality rate and a survival period of 11 to 84 months only. By delivering various medicines directly to the tumour, blood-brain barrier-crossing nanoparticles can increase the efficacy of treatment. Immunotherapy uses genetically engineered T cells or immune checkpoint inhibitors to direct the body's immune system against cancer cells, establishing long-lasting protection against tumour recurrence. Precision medicine is improved by CRISPR-Cas9, a gene-editing technique that recognizes and alters the genes responsible for tumour growth. These innovative techniques, which are frequently combined with conventional therapies, show promise in the fight against brainstem glioma. They enhance medication delivery, strengthen immunological function, and specifically target genes that cause tumours. In order to further these cutting-edge treatments and perhaps eradicate cancer in the future, research and public awareness are essential. Therefore, our goal is to highlight the effects of brainstem glioma, from the difficulties it poses to the cutting-edge and promising treatments available, all the while highlighting the significance of research and public awareness in the pursuit of a world free of cancer.

Keywords: Cancer, Brainstem Glioma, Nanotechnology, Immunotherapy, CRISPR-Cas System

Abstract 32

THE FUTURE OF CANCER SCREENING AND TREATMENT

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Early detection is the key-

One of the most highly specific and effective screening methods is a Liquid biopsy. The current definition of a liquid biopsy must be broadened to include non-tumor derived information.

Delay in diagnosis will result in weaker prognosis-

Early detection is key for improved quality of life, survival, and to reduce the financial burden of cancer treatments at later stages.

Aptamers, cost effective and efficient-

Aptamers are a type of chemical antibodies that can be used as molecular probes instead of monoclonal antibodies. They can be used for both diagnostics and therapeutic purposes.

So, what about the future of cancer therapy?

At later stages of cancer, surgery is markedly less effective, radiotherapy more likely indicated but high doses of radiation can be harmful, and chemo-therapeutic drugs are often more toxic.

Drug repurposing

Identifying the anti-neoplastic effects of a drug and studying its targeted molecular pathways, it is possible to find promising candidates for cancer therapy.

Here are some ways for cancer treatment which could be effective in future

- Antibody-drug conjugates
- Use of repurposed drugs
- Nanoparticles
- Oncolytic virus therapy

Keywords: Liquid Biopsy, Aptamer, Cancer Therapy, Drug Repurposing

Abstract 33

IMMUNOTHERAPY: THE NEW AGE CANCER TREATMENT

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Immunotherapy, in the current world, has become the beam of hope for cancer patients and is giving a new direction in Oncology treatment. Traditional cancer treatments had certain limitations coupled with benefit. The advent of immunotherapy has added a new dimension to cancer therapy. Regular cancer treatments are now done by using this technique as it can successfully alleviate the tumour cells. Immunological approach is now being used as a powerful weapon which includes various innate and adaptive immune cells and organs like T cells, Natural killer cells (NK cells), Dendritic cells (DC cells), macrophages, B cells, which are involved in regulating tumour progression and treatment responses. Typically, immunotherapy is recommended for advanced stage cancer patients. The immunomemory component of immunotherapy results in longer lasting and better efficacy against cancer recurrence.

Keywords: Immunotherapy, T cells, NK Cells, Macrophages

Abstract 34

IMMUNOTHERAPY: A BREAKTHROUGH IN ONCOLOGY

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Cancer is a global health problem responsible for one in six deaths worldwide with a highly complex treatment process. While Conventional treatment approaches, such as surgery, chemotherapy, and radiotherapy, have been effective for years, they also come with certain drawbacks and side effects. Immunotherapy is one of the latest and brightest alternatives to the traditional cancer treatments, and has already led to major advancements in treatments of many cancers, including the ones that have been historically resistant to chemotherapy and radiation treatments. Dostarlimab, (PD-1) monoclonal antibody has mesmerized the medical profession by showing a complete 100% cure in patients with colorectal cancer. Thus, Immunotherapy has given medical science stronger and more efficient weapons to fight against cancer which was previously considered an incurable malady.

Keywords: Chemotherapy, Immunotherapy, Dostarlimab, Cancer

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A State Level Seminar

WORLD CANCER RESEARCH DAY

INVITED LECTURE SESSION AND POSTER COMPETITION

Organized by Research Committee
&
Microbiologists Society, India (West Bengal Unit)

Theme

Impact of Cancer in Life: An Insight into Research and Awareness

Session 1: INVITED LECTURES



Dr. Susanta Roychoudhury
ICMR Emeritus Scientist
Molecular & Human Genetics Division
Indian Institute of Chemical Biology

Title of the Talk:
Precision Oncology: The Future of Cancer Therapy



Dr. Urmi Chatterji
Professor
Department of Zoology
University of Calcutta

Title of the Talk:
Humble the Hippo-Repurpose
Drugs for Cancer Cure

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Students, Scholars and Faculty Members are welcome to participate in the program.

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Last Date of Registration for All Participants: 30.09.2023

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Venue
AV room 2
Date
4th October
2023
Time
10:00AM

Chairperson:
Dr. Mausumi Singh Sengupta
(Principal)

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A State Level Seminar on World Cancer Research Day, 2023 Certificate of Participation		
<p><i>This is to certify that _____ of _____ College/ University has actively participated in the 'State Level Seminar on World Cancer Research Day, 2023, jointly organised by the Research Committee and Microbiologists Society, India (West Bengal Unit) held on 4th October, 2023 at THK Jain College.</i></p>		
Dr. Mausumi Singh Sengupta Principal		Dr. Anamika Ghatak Convener, Research Committee

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Dr. Mausumi Singh Sengupta Principal		Dr. Anamika Ghatak Convener, Research Committee

PHOTOGRAPHS



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