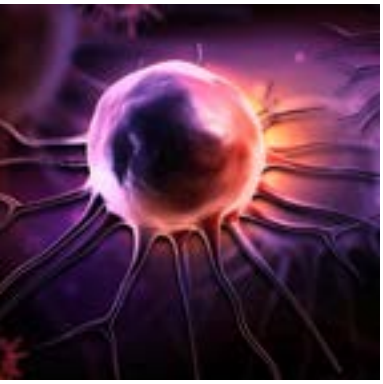
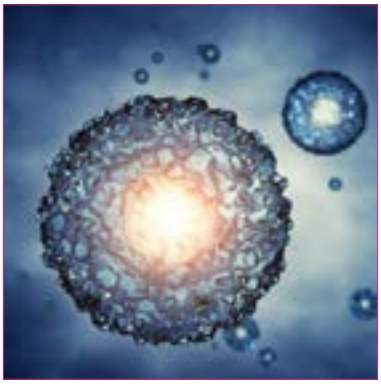
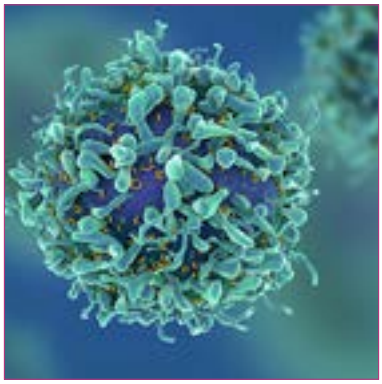
Keynote Forum
October 30, 2017

Oncology and Therpeutics 2017







International Conference on

Oncology and Cancer Therapeutics

October 30- November 01, 2017 | Chicago, USA

Jianhua Luo

University of Pittsburgh School of Medicine, USA

Targeting cancer specific fusion genes

Chromosome rearrangement is one of the hallmarks of human malignancies. Recently, we discovered a panel of fusion genes that are widely present in a variety of human cancers. One of these fusion genes called *MAN2A1-FER* has shown cancer driver activity in multiple malignancies both in animals and human. Other fusion genes also appear to play critical roles in the human cancer development. Due to high frequency of these fusion genes in cancer samples, targeting at these fusion genes may achieve effective control of human cancers. In this study, we develop a genome targeting strategy to insert an artificial gene device into the chromosomal breakpoints of cancer genome using CRISPR-cas9 genome editing system. Genome targeting at the chromosomal breakpoint of fusion genes produced high rate of insertion of suicide gene into the cancer genome, while had minimal impact on cells that do not contain the fusion gene breakpoint. Treatment of animals xenografted with cancer cells containing fusion genes using this genome targeting approach resulted in partial remission of the cancers and zero mortality. In contrast, all control animals quickly succumb to these xenografted cancers. Thus, genomic targeting may hold promise as an effective treatment for human cancers.

Speaker Biography

Jianhua Luo has been studying molecular pathology related to human malignancies from the last 28 years. Currently, he is a Professor of Pathology and Director of High Throughput Genome Center at University of Pittsburgh. In the last 17 years, he has been largely focusing on the genetic and molecular mechanism of human prostate and hepatocellular carcinomas. He is one of the pioneers in utilizing high throughput gene expression and genome analyses to analyze field effects in prostate cancer and liver cancer. He is also the first in using methylation array and whole genome methylation sequencing to analyze prostate cancer. Recently, his group discovered several novel fusion transcripts and their association with aggressive prostate cancer. Overall, these findings advance our understanding of how cancer develops and behaves and lay down the foundation for better future diagnosis and treatment of human malignancies.

e: luoj@upmc.edu

Octavian Bucur

BIDMC, USA

Expansion pathology: Physical tissue expansion for nanoscale imaging and investigation of clinical specimens

Background: In pathology, examination of cellular structures and molecular composition using diffraction-limited microscopy is key to diagnosis. Recently, a new approach, Expansion Microscopy, was developed to enable physical magnification and high resolution imaging of cell lines and mouse brain sections with conventional optical microscopes, by embedding them in a dense swellable polymer and adding water to swell the polymer after the enzymatic digestion of the proteins. The purpose of our study is to develop a pathology-optimized physical tissue expansion method for nanometer imaging and investigation of clinical tissue samples and to analyze its utility in diagnostic pathology and research.

Methodology: We developed a pathology optimized physical tissue expansion method called Expansion Pathology (ExPath), which uses clinically optimized chemistry, labeling and imaging methodologies to enable the expansion and visualization of both human FFPE and frozen clinical samples, including previously stained/unstained, mounted/unmounted and whole tissue slide/tissue microarrays sections, of a wide variety of fixed human tissue types and pathologies.

Findings: This ExPath protocol enabled expansion of human normal and cancer tissues ~4.5x in linear dimension and ~100x in volume, with a post-expansion measurement error of 3-7%. Physical tissue expansion pushes the optical microscopes beyond their limits (currently 250 nm in resolution), by enabling for the first time ~70 nm resolution imaging of diverse biomolecules in intact tissue with an optical microscope. With ExPath, certain lesions and pathologies of the kidney previously diagnosed with an electron microscopy (EM) can now be diagnosed with a conventional optical microscope after physical tissue expansion, an inexpensive, faster and reliable strategy. It also enables high-fidelity computational discrimination between early breast neoplastic lesions that to date have challenged human judgment.

Conclusion: ExPath offers new approaches for assessing pathologically important features in human tissue. It may eliminate the need for EM in diagnosis of certain diseases for which EM is required for diagnosis and it can improve the computational discrimination between pathological lesions that are hard to distinguish with existing techniques. ExPath may enable routine use of nanoscale imaging in molecular pathology and research.

Speaker Biography

Octavian Bucur is working as an Instructor in the Departments of Pathology and Medicine at the Harvard Medical School, BIDMC, in Boston, MA, focusing on the development and application of new experimental and computational technologies with significant impact in molecular, diagnostic pathology and personalized medicine. He is also a member of the Ludwig Cancer Center at Harvard and Broad Institute of MIT and Harvard. In collaboration with Dr. Edward Boyden's laboratory at MIT, he has developed a pathology-optimized physical tissue expansion method called Expansion Pathology that enables ~100 times expansion in volume of any type of clinical specimen and visualization of 70-80 nm structures with conventional optical microscopes (currently limited to ~250 nm resolution). Expansion Pathology has the potential of replacing electron microscopy in diagnosis and investigation of certain pathologies and nanometer structures (Nature Biotechnology, in press; 3 patents filed).

e: obucur@bidmc.harvard.edu

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October 31, 2017

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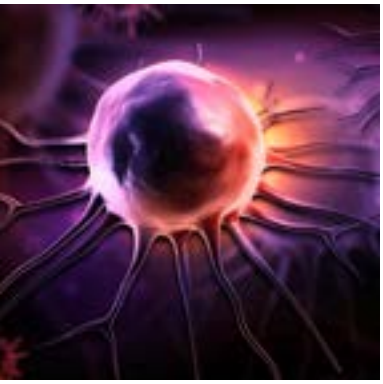

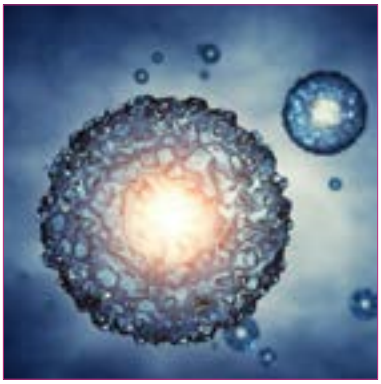

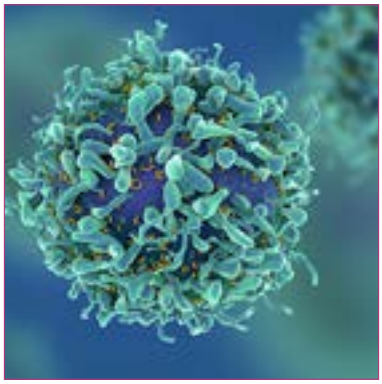

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Jenny Y Wang

University of New South Wales, Australia

New therapeutic strategies for targeting leukemia stem cells

Acute myeloid leukemia (AML) is a lethal blood cancer. The majority of AML patients experience a recurrence of their cancer after initial treatment and eventually die from their disease. Clinical evidence has supported the important role of leukemic stem cells (LSCs) in the high relapse rate of AML patients. The ability for self-renewal and drug resistance are fundamental properties of LSCs that drive disease progression and relapse. Identification of pathways and their molecular components essential for the regulation of abnormally acquired stem cell-like properties is a prerequisite for understanding the underlying mechanisms of oncogenesis and designing effective anticancer therapeutic strategies. G protein-coupled receptors have been implicated in playing critical roles in multiple cancers, where specific members of this family influence self-renewal and tumorigenesis, largely through activation of β-catenin signaling. We have recently reported an essential role for G protein-coupled receptor 84 (GPR84) in regulating oncogenic β-catenin signaling and in maintaining LSC properties in AML. Inhibition of specific G protein-coupled receptor signaling impairs LSC self-renewal, underlining its therapeutic value in developing novel LSC-targeted therapies for AML treatment.

Speaker Biography

Jenny Y Wang is Head of the Cancer and Stem Cell Laboratory at the University of New South Wales, Sydney, Australia. She received her PhD at Macquarie University in Australia and undertook Post-doctoral research in Leukemia Stem Cell Biology (2005-2011) at Children's Hospital Boston, Harvard Medical School. She has returned to Australia in 2011 and has established her independent research laboratory. The main research focus of her lab is to develop novel therapeutic strategies specifically targeting leukemic stem cells that are now believed to be the root cause for treatment failure and relapse in leukemia.

e: JWang@ccia.org.au

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Priyanka Debta

SOA University, India

Oncology and cancer therapeutics aspect of MALT lymphoma of salivary gland

Lymphocytes are made in bone marrow and can develop into either T-cells or B-cells. Uncontrolled dividing lymphocytes lead to lymphoma. Salivary glands MALT lymphoma arises from cancerous B- cells. Marginal zone lymphoma is a slow-growing B-cell non-Hodgkin's lymphoma. Extra nodal marginal zone lymphoma is one of the types of marginal zone lymphoma. Mucosa-associated lymphoid tissue (MALT) is another name of it. MALT lymphoma of the salivary gland is an uncommon condition that generally affects older adults. The cause of MALT lymphoma of the salivary gland is unknown. There may be certain genetic defect such as translocation of the chromosomes. This may result in increased production of their mRNA, thus increasing their protein levels. The new protein formation due to an exchange of protein-coding regions of a gene leads to the inappropriate growth of cells. Similar signs and symptoms can be seen in other clinical conditions. Thus to arrive at a definitive diagnosis, additional tests should be performed to rule out other clinical conditions. Chemotherapy, radiation therapy, surgery and other treatment measures may be used for treating MALT lymphoma of salivary gland based on the assessment of the physician. Progression of the lymphoma, response to treatment and overall health of the individual affect the prognosis of lymphoma. Physical and emotional distress can be associated with the treatment for MALT lymphoma of a salivary gland, so along with treatment; supportive care and encouragement help positively and can bring a measure of relief to the patients. Awareness and early detection of MALT lymphoma of salivary gland can help to reduce the patient's morbidity and mortality.

Speaker Biography

Priyanka Debta did her MDS (Oral Pathology and Microbiology), IDS from Soa University, BBSR, Odisha. She has more than eight years' of experience in this field of Oral Pathology and Microbiology. She is a dedicated, resourceful and innovative instructor for Undergraduate and Post-graduate students that helps in intellectual growth by creating an atmosphere of mutual respect and open communication. Her various review, research work and case reports has been published in reputed international and national journals. She has been also contributed as a co-author in the book treatment of trigeminal neuralgia by Lambert publication. She has also participated for posters and oral paper presentations in various national and international conferences. Her broad area of interest in research work is evaluation of immunological cells infiltration in oral oncology and in various odontogenic cysts and in the field of Forensic Odontology.

e: drpriyanka_1234@rediffmail.com

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