



SPARC

*Summer Program to Advance
Research Careers*



TEC Talks Series

“Technologies Emerging in Cancer”

August 8-9, 2018

2:00-4:30pm

Dana-Farber Cancer Institute

450 Brookline Avenue

Boston, MA



dfhcc.harvard.edu/SPARC

Wednesday, August 8th

Samprity Ankita

David Miyamoto, MD, PhD – [Massachusetts General Hospital](#)
Up to 30% of patients diagnosed with muscle invasive bladder cancer (MIBC) who undergo bladder preservation therapy will ultimately need a radical cystectomy. We are identifying biomarkers in circulating tumor cells (CTCs) to better detect and monitor MIBC. Correlation of biomarkers with cancer aggressiveness will guide clinical decisions regarding bladder preservation therapy.

Faith Boyd-Mutinga

Lorenzo Trippa, PhD – [Dana-Farber Cancer Institute](#)
Randomized control trials are the “gold standard” for testing new drugs. They randomly assign participants to either a treatment group, who receive the drug, or a control group, who do not.

Damian Cruz

Sean Lawler, PhD – [Brigham and Women’s Hospital](#)
As a glioblastoma grows in the brain, the Blood Brain Barrier loses features such as tight junctions and protein expression, becoming the Blood Tumor Barrier (BTB). We analyzed in vitro BTB spheroid features and compared them with in vivo BTB features. The main goal is to be able to use the BTB sphere model for glioblastoma drug screenings and the study of its molecular pathways.

Loubert Demosthene

Shoba Ramanadhan, ScD – [Dana-Farber Cancer Institute](#)
Baraka Community Wellness is a Boston based nonprofit organization that provides healthy foods to low-income families.

Saja EL-Saudi

Rosalind Segal, MD, PhD – [Dana-Farber Cancer Institute](#)
The Sonic Hedgehog (Shh) pathway is responsible for 30% of medulloblastomas, the most common malignant brain tumor. Few non-invasive and effective treatments exist. Identification of proteins that interact with Eyes Absent homolog 1 (Eya1) phosphatase, a key player in the Shh pathway, will shed light on Eya1’s function during tumor formation and its potential as a therapeutic target.

Hiwot Ferede

Hongbo Luo, PhD – [Boston Children’s Hospital](#)
Immunocompromised individuals, such as cancer patients undergoing chemotherapy, can suffer from mucosal yeast infections, candidiasis, caused by *Candida albicans*. Our primary goal is to understand whether candidalysin, a virulence factor of *C. albicans*, triggers a response in host immune cells that may lead to candidiasis. Results may suggest candidalysin inhibitors as therapeutic options.

Ramla Hagi

Judith Agudo, PhD – [Dana-Farber Cancer Institute](#)
Cancer stem cells (CSC) are a group of cells that are hypothesized to prevail in tumors as a rare population that can cause relapse or metastasis by colonizing to other tissue regions.

Lleyan Hashim

Rulla Tamimi, ScD – [Brigham and Women’s Hospital](#)
Mammographic density is a good indicator of breast cancer risk and breast cancer. There are limited validated software tools that assess mammographic density.

Baby Lenga Kalemba

Tayyaba Hasan, PhD – [Massachusetts General Hospital](#)
We seek to develop a high-throughput 3-D, bio-printed ovarian cancer model for screening of biologics and small molecules for photodynamic therapy. Such a model would prove more efficient, cost-effective, accurate, and viable and will reduce the use of animals in preclinical experiments during drug development.

Urwah Kanwal

Ben Croker, PhD – [Boston Children’s Hospital](#)
Apoptosis, cell death without inflammation, and necroptosis, cell death with inflammation, are distinct cell death pathways. The lack of SHP-1 protein in neutrophils leads to skin inflammation in mice. Our project studies whether neutrophils lacking SHP-1 undergo necroptosis more readily than wild-type neutrophils.

Kingsly Mante Angua

Marc Vidal, PhD – [Dana-Farber Cancer Institute](#)
The Vidal lab maps protein-protein interactions (PPI) and how drugs perturb PPI’s in biological systems.

Fatou Ndoye

Jonathan Celli, PhD – [University of Massachusetts Boston](#)
Pancreatic cancer has a low survival rate largely due to its inoperable and chemotherapy-resistant nature. Photodynamic therapy (PDT) is a promising pancreatic cancer treatment. We hypothesized that silencing microRNA 21, known to cause chemotherapy resistance in pancreatic cancer cells, would increase susceptibility to PDT.

Aloysius Ogbemor

Wei Zhang, PhD – [University of Massachusetts Boston](#)
The goal of this research is to develop biologically active compounds targeting cancer. The synthesis involves a green synthetic approach of atom- and step-economy, three-component (3+2) cycloadditions, and post-condensations.

Suelen Oliveira de Almeida

Daniel Dowling, PhD – [University of Massachusetts Boston](#)
Understanding the relationships between structure and function of proteins is important because problems with molecular function are connected to disease and are often the result of measurable changes in structure. Solving the structure of the cancer associated enzyme HsPPA1 will improve our understanding of its role in the disease.

Albena Orlova

Alan Engelman, PhD – [Dana-Farber Cancer Institute](#)
We are creating knockout cell lines for cell factors that potentially bind to HIV integrase. This study will help us understand more about which genes are essential for HIV-1 to integrate with human genes. Study results will benefit researchers by providing more specific information about the importance of specific proteins in HIV-1 binding and potentially move closer to a cure for HIV/AIDS.

Thursday, August 9th

Divya Patel

Jun Qi, PhD – Dana-Farber Cancer Institute
KRAS mutated and p53 deficient (KP) non-small cell lung cancer (NSCLC) is a common type of cancer that has no effective therapies. Our goal is to identify and validate potential novel therapeutic targets using a KP NSCLC cell line. This study could identify compounds that could be used as therapies.

Joyce Quach

Chris Sander, PhD – Dana-Farber Cancer Institute
To learn more about recurrent oncogenic mutations in proteins, we analyze how a mutated amino acid (a.a.) interacts with other a.a. in a protein based on its evolutionary couplings.

Evelyn Rosario

James DeCaprio, MD – Dana-Farber Cancer Institute
Merkel cell polyomavirus is the virus that causes the highly aggressive skin cancer Merkel cell carcinoma. The viral protein small T (ST) is an oncoprotein important for viral replication. We hypothesize that cells expressing ST grow at a faster rate than normal cells. Learning why this virus causes cancer may suggest potential therapeutic targets.

Sameira Sahraoui

Deborah Schrag, MD, MPH – Dana-Farber Cancer Institute
Unlike adults, adolescent and young adult cancer patients do not have standardized quality indicators for end of life care. We strive to improve their end of life care by gathering information from medical records and interviews. Development of better end of life care standards will impact both patients and doctors positively and, therefore, ensure that the best end of life care is provided.

Dakotah Scalzi

Stephanie Dougan, PhD – Dana-Farber Cancer Institute
Commonly used treatment strategies like surgery and chemotherapy are often ineffective for pancreatic cancer due to its late diagnosis. Our project studies the effect of LCL-161 in fighting pancreatic cancer. The goal is to understand how LCL-161 works to help better promote the body's own immune response. This type of immunotherapy could represent an alternative treatment method.

Amira Sesay

Timothy Rebbeck, PhD – Dana-Farber Cancer Institute
Prostate cancer (PCa) affects men of African descent to a greater degree than any other racial or ethnic group. Comparison of PCa biomarkers AMACR (Racemase) and PSMA levels in African American versus European American men, and their correlation with disease aggressiveness, will allow us to better understand PCa disparities.

Rooman Shahid

Allon Klein, PhD – Harvard Medical School
During development, cells both divide and differentiate. We are interrogating cell cycle dependent fate choices by arresting the cell cycle in embryos and identifying changes in

the cell cycle and differentiation. By understanding how the cell cycle and differentiation are coupled, we will have more control over cellular differentiation and growth, thus better understanding diseases like cancer.

Mayra Teixeira

Maryam Asgari MD, MPH – Massachusetts General Hospital
Non-melanoma skin cancers like multiple squamous cell carcinoma are the second most common cancer in the U.S. Our goal is to identify risk factors associated with multiple cutaneous squamous cell carcinoma using tumor biobank data. Results of this study will help physicians identify subjects who need additional dermatologic surveillance.

Ashley Theard

Giovanni Parmigiani, PhD – Dana-Farber Cancer Institute
We develop models that predict an individual's probability of developing cancer and cancer recurrence. Proper communication of this information to patients and the general public is important. This summer we developed strategies to ensure understanding of cancer risk factors, with the intention to encourage people to take cancer preventative measures.

Nacura Toure

Sun Kim, PhD, RN – University of Massachusetts Boston
Underserved populations, especially African American and Latina women living with HIV, are three times more likely to smoke than the general U.S female population and they are at higher risk for developing heart disease and lung cancer.

Handel Ulysse

Shailja Pathania, PhD – University of Massachusetts Boston
Women with mutations in the DNA damage repair enzyme BRCA2 are 60-80% more likely to develop breast and ovarian cancer. Our research goal is to observe the effects of the absence of certain BRCA2 protein domains on its ability to repair DNA damage. This research will allow us to better understand the function of the BRCA2 and how its domains are linked to ovarian and breast cancer.

Tianhong Wang

Changmeng Cai, PhD – University of Massachusetts Boston
Mutations in NEDD9 are associated with increased rates of cell proliferation and metastases. Our primary goal is to identify the oncogenic function of NEDD9 in prostate cancer.

Fatema Zohura

Ana Lindsay, DrPH, MPH, DDS – University of Massachusetts Boston
Human Papillomavirus (HPV) causes cervical cancer and can be prevented through vaccination. Our goal is to understand what Latina mothers know about HPV and its vaccine by conducting semi-structured interviews with mothers of children between the ages of 11-19. A mother's knowledge and attitude about HPV and vaccines can greatly influence the decision to have their child vaccinated.



The Dana-Farber/Harvard Cancer Center (DF/HCC), in partnership with the University of Massachusetts at Boston (UMB), presents the Summer Program to Advance Research Careers (SPARC), a 12-week intensive research experience focused on emerging technologies (ET) in cancer and cancer disparities. Each year, 28 undergraduates who have just completed the first or second year engage in full-time mentored cancer research experiences in research environments across DF/HCC and UMB. SPARC students are selected from UMB and its top feeder community colleges (Bunker Hill, Roxbury, and Mass Bay) and matched with mentors in research environments focused on cancer and cancer disparities research using emerging technologies. SPARC focuses on three areas critical to the development of successful, innovative cancer researchers: 1) acquisition of scientific knowledge in the area of cancer and emerging technologies; 2) development of communication skills; and 3) individualized career preparation. Program activities in these three areas provide the strong intellectual, technical and personal foundation essential for developing and implementing cutting edge research. SPARC students not only gain confidence that they can successfully pursue a career in cancer research, but also begin constructing a practical road map for achieving that goal. This initiative is funded through an R25 grant from the National Cancer Institute (NCI CA214256).