Walther Cancer Foundation Symposium

Harper Cancer Research Institute

February 2-3, 2018

Friday, February 2nd

3:00pm	**Hotel Check-in**	**The Morris Inn -** phone 574/631-2000
4:00pm	**Registration**	**Eck Visitor's Center**
5:00pm	**Opening**	**Welcome** – Robert "Bob" Bernhard, Vice-President of Research, Notre Dame
5:05pm	**Keynote Address**	**Eck Visitor's Center**

"Convergence of Nanoimaging and Biology: from Decoding Chromatin Packing to Cancer Diagnostics and Therapeutics"

Abstract: The talk discusses how the development of new optical nanoimaging technologies and the modeling of complex molecular interactions involved in gene expression can help decipher the chromatin packing code, its regulation of gene expression, and help explain how global stochastic patterns of gene expression may influence a wide range of cellular processes, elucidate early neoplastic events, and lead to the discovery of new cytological biomarkers of early carcinogenesis as well as new anti-cancer therapeutics.

Vadim Backman, PhD is the Walter Dill Scott Professor of Biomedical Engineering at the McCormick School of Engineering and Applied Sciences, Professor of Medicine in Hematology/Oncology at the Feinberg School of Medicine at Northwestern University and Program Leader, Cancer and Physical Sciences, at the Robert H. Lurie Comprehensive Cancer Center. He received a Ph.D. in Medical Engineering from Harvard University and Massachusetts Institute of Technology. An internationally renowned expert in biomedical optics, Dr. Backman develops revolutionary nanoscale imaging technologies that allow researchers to explore previously intractable questions in biology, disease diagnosis, and drug screening, with a focus on detecting cancer at its earliest stages as well as the development of novel therapeutics to prevent the emergence of resistance to chemo and immunotherapies. Dr. Backman is also the founder of a number of biotechnology companies that commercialize his technologies. His first early screening test for lung cancer is expected to enter clinical use in 2018.

6:00pm	**Reception**	**Eck Visitor's Center**
7:00pm	**Dinner**	**Eck Visitor's Center**

Saturday, February 3rd

7:00am **Breakfast** **Coffee and light breakfast - Eck Visitor's Center**

8:00am **Session–Cancer Engineering** **Eck Visitor's Center**

8:00-8:20am Craig J. Goergen, Purdue University, *"Multi-Modality Photoacoustic Tomography, Ultrasound, and Light Sheet Microscopy for Volumetric Tumor Margin Detection"*

8:20-8:40am Paul Macklin, Indiana University, *"Progress Towards High-Throughput Hypothesis Testing with Computational Modeling"*

8:40-9:00am Prakash Nallathamby, Notre Dame, *"CD133 Targeted Nanoparticle Image Contrast Agents for In Vivo Detection of Cancer Stem Cells"*

9:00-9:20am Jeremy Zartman, Notre Dame, *"Mechanical Stress Dissipation During Organ Growth Through Calcium Signaling"*

9:20-9:40am BREAK

9:40-10:00am Glen Niebur, Notre Dame, and Laurie Littlepage, Notre Dame, *"Regulation of the Dormancy Switch to Activate Metastatic Colonization of Dormant Breast Cancer Cells During Bone Metastasis"*

10:00-10:20am Bumsoo Han, Purdue University, *"Engineering New Tumor Models of Cancer-Stroma Interactions in Pancreatic Cancer"*

10:20-10:40am Pinar Zorlutuna, Notre Dame, *"Stromal Cell-Laden 3D Hydrogel Microwell Arrays to Study Breast Cancer-Tumor Microenvironment Interactions"*

10:40-11:00am Discussion

11:00am **Lunch** **Eck Visitor's Center**

12:00pm **Session-Bioinformatics** **Eck Visitor's Center**

12:00-12:20pm Jun Wan, Indiana University, and Nadia Atallah, Purdue University, *"The Collaborative Core for Cancer Bioinformatics: Past, Present and Future"*

12:20-12:40pm Yunlong Liu, Indiana University, *"The Role of Alternative Splicing in Complex Disease"*

12:40-1:00pm Melissa Fishel, Indiana University, *"An Investigation into Drug Synthetic Lethality Using Single Cell RNA Sequencing Following APE1/Ref-1 Inhibition as a Novel Therapeutic Approach"*

1:00-1:20pm Harikrishna Nakshatri, Indiana University, *"Understanding Normal and Tumor Biology of Breast at Individual Level through Single Cell Analyses"*

1:20-1:40pm BREAK

1:40-2:00pm Sophie Lelièvre, Purdue University, *"Control of Gene Expression via Higher Order Chromatin Organization"*

2:00-2:20pm Majid Kazemian, Purdue University, *"Pan-Cancer Analysis Reveals Novel Host-Pathogen Interactions in EBV-Associated Tumors"*

2:20-2:40pm Steven Buechler, Notre Dame, *"ColotypeR: A Comprehensive Subtyping and Risk Assessment Tool for Colon Cancer"*

2:40-3:00pm Siyuan Zhang, Notre Dame, *"Dissecting Spatiotemporal Heterogeneity of Cancer Metastasis Using Single Cell Analysis"*

3:00-3:20pm Zonggao Shi, Notre Dame, *"Developing a Targeted NGS Panel for Cancer Research and Oncology Care"*

3:20-3:40pm Discussion

3:40pm **Departure**