

INNOVATIONS TORONTO 2016 PRESENTS



Innovations in

**Cancer Therapy &
Response Monitoring**

November 16 - 17, 2016

The Vaughan Estate of Sunnybrook

Toronto, Canada

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ELEKTA

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PHILIPS

ALPION
MEDICAL SYSTEMS

Speakers

FEATURED

Dr. Guy Cloutier, PhD
Professor, University of Montreal

Dr. Gregory J. Czarnota, PhD, MD, FRCPC
Chief, Department of Radiation Oncology, Odette Cancer Centre
Sunnybrook Health Sciences Centre

Dr. Cheri X. Deng, PhD
Professor, Biomedical Engineering
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Research Director, Lizzi Center for Biomedical Engineering,
Riverside Research

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Professor, Mayo Clinic School of Medicine

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Professor, Medical Physics,
University of Wisconsin School of Medicine and Public Health

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Scientific Director, Heart, Lung & Vascular Institute
Professor, Internal Medicine, Division of Cardiovascular Health and
Disease and Biomedical Engineering Program
University of Cincinnati

Dr. Robert Kerbel, PhD
Senior Scientist, Biological Sciences
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Associate Professor, Radiology/Urologic Sciences,
University of British Columbia

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Research Associate Professor, Department of Radiology
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Dr. William O'Brien, PhD
Professor, University of Illinois

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Professor, University of Illinois

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Senior Scientist, Physical Sciences
Sunnybrook Research Institute

Dr. Xueding Wang, PhD
Associate Professor, University of Michigan

Dr. Roger Zemp, PhD
Associate Professor, University of Alberta,
Department of Electrical & Computer Engineering

INDUSTRY

Dr. Sangeet Ghai, MD, FRCR
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Associate Professor, University of Toronto

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Posters

Authors	Title
<u>Jay Detsky</u> , John Conklin, Julia Keith, Sean Symons, Arjun Sahgal, Chris Heyn, Hany Soliman.	Differentiating Radionecrosis from Tumor Progression in Brain Metastases Treated with Radiosurgery: Utility of Intravoxel Incoherent Motion Perfusion MRI and Correlation with Histopathology
<u>Golnaz Farhat</u> , Anoja Giles, Michael C. Kolios, Gregory J. Czarnota.	Optical Coherence Tomography Spectral Analysis for Detecting Apoptosis <i>In Vitro</i> and <i>In Vivo</i>
<u>Mehrdad J. Gangeh</u> , Peng Chen, William T. Tran, Gregory J. Czarnota	Deep Learning in Clinical Cancer Therapy Response Monitoring
<u>Sayed Masoud Hashemi</u> , Young Lee, Markus Eriksson, Håkan Nordström, James Mainprize, Arjun Sahgal, William Y. Song, Mark Ruschin.	Cone-Beam CT Image Contrast and Attenuation-Map Linearity Improvement (CAL) for Brain Stereotactic Radiosurgery Procedures
<u>Ryan M. Jones</u> , Meaghan A. O'Reilly, Lulu Deng, Kogee Leung, Kullervo Hynynen	Volumetric Ultrasound-Mediated Blood-Brain Barrier Opening Using a Large Aperture Phased Array Controlled Via Passive Beamforming of Microbubble Emissions
<u>Wilfred W. Lam</u> , Jonathan H. Klein, Farah Hussein, Christine Tarapacki, Gregory J. Czarnota, Greg J. Stanisz	Differentiation of Apoptosis/Necrosis from Active Tumour in Mice with Chemical Exchange Saturation Transfer (CEST) MRI
<u>Matthew R. Lowerison</u> , Ann F. Chambers, Hon S. Leong, Nicholas E. Power, James C. Lacefield	Compound Speckle Model Reduces Contrast Ultrasound Variability in a Patient-Derived Xenograft Model of Renal Cell Carcinoma
<u>Shirin Sabouri</u> , Silvia D. Chang, Richard Savdie, Edward C. Jones, S. Larry Goldenberg, Peter C. Black, Piotr Kozlowski	Comparing the Diagnostic Accuracy of Luminal Water Imaging with Diffusion-Weighted and Dynamic Contrast-Enhanced MRI for Evaluation of Prostate Cancer
<u>Lakshmanan Sannachi</u> , William Tran, Mehrdad Gangeh, Sonal Gandhi, Frances Wright, Gregory J. Czarnota	Response Monitoring of Breast Cancer Patients Receiving Neo-Adjuvant Chemotherapy Using QUS, Texture and Molecular Features
<u>A. J. Sojahrood</u> , H. Haghi, R. Karshafian, M. C. Kolios.	Finite Element Simulation of the Propagation of Ultrasound Waves in a Bubbly Medium and Theoretical Considerations for Treatment Optimization
<u>Yanjie Wang</u> , Michael C. Kolios.	Biodegradable Theranostic Agents for Breast Cancer Detection and Therapy Using Photoacoustic Technique
<u>Lauren A. Wirtzfeld</u> , Eric M. Strohm, Michael C. Kolios.	Ultrasound and Photoacoustic Analysis of HT-29 and AML Cell Pellets at 200 MHz
Jason Vickress, Michael Lock, Aaron Leung, Stewart Gaede, Rob Barnett, <u>Slay Yartsev</u>	Potential Benefit of Rotational Radiation Delivery

Innovations in Cancer Therapy & Response Monitoring

Wednesday, November 16th, 2016

Presenter Time Title

BREAKFAST 08:00 – 08:45

G. Czarnota & M. Kolios	08:45	Welcome & Introduction
R. Kerbel	09:00	Implications of 'Vessel Co-option' by Tumors for Antiangiogenic Therapy of Metastatic Disease

TISSUE CHARACTERIZATION & ELASTOGRAPHY I - Chaired by M. Kolios

G. Czarnota	09:30	<i>A priori</i> Prediction of Neoadjuvant Chemotherapy Response and Survival in Breast Cancer Patients Using Quantitative Ultrasound
W. O'Brien	09:50	Quantitative Ultrasound: Some Interesting Outcomes
M. Oelze	10:10	The Potential of Monitoring of Focused Ultrasound Treatment of Tumors using Quantitative Ultrasound

BREAK 10:30 - 11:00

SHEARWAVE & PHOTOACOUSTICS I - Chaired by G. Stanisz

M. Kolios	11:00	On the Potential of Photoacoustic Tissue Characterization for Cancer Treatment Monitoring
R. Zemp	11:20	Multimodal Photoacoustic- Ultrasound Molecular Imaging and Biomarker Diagnostics
X. Wang	11:40	Evaluating Histological Microfeatures and Microenvironment of Cancer <i>in Vivo</i> by Photoacoustic Techniques
W. Tran	12:00	Predicting Clinical and Pathological Response of Breast Tumours to Neoadjuvant Chemotherapy Using Pre-treatment Textural Features of Diffuse Optical Spectroscopic Images

LUNCH 12:15 – 14:05

THERAPY & THERAPY MONITORING I - Chaired by G. Czarnota

C. Holland	14:05	Ultrasound-Mediated Drug Delivery for Cardiovascular Disease
C. Deng	14:25	Acoustic Tweezing Cytometry for Mechanobiology Investigations
O. Kripfgans	14:45	Microbubbles for Cavitation Enhanced Treatment- Non-Invasive Tissue Reduction for Treatment of Hypertrophic Cardiomyopathy
C. Kumaradas	15:05	Picosecond Cell Nanosurgery using Gold Nanoparticle Assemblies

BREAK 15:20 - 15:50

J. Lee	15:50	Alpinion Clinical Research Ultrasound System
M. O'Reilly	16:05	Ultrasound-Mediated Drug Delivery for the Treatment of Leptomeningeal Metastases
D. Goertz	16:20	Potentiating Anticancer Agent Effects with Ultrasound Stimulated Microbubbles

POSTER SESSION & HORS D'OEUVRES 16:45 - 18:30

DINNER 18:30-20:30

Innovations in Cancer Therapy & Response Monitoring

Thursday, November 17th, 2016

Presenter **Time** **Title**

BREAKFAST **08:00 – 08:45**

SHEARWAVE/PHOTOACOUSTICS II - Chaired by G. Stanisz

G. Cloutier	09:00	Improvement of Solid Breast Lesion Classification by Adding Homodyned K Modeling to Shear Wave Elastography
J. Greenleaf	09:20	Shear Wave Speed Differentiates Lymph Nodes in Breast Cancer Patients
C. Huppel	09:40	Detecting Tumour Response to a Vascular Disrupting Agent using Multispectral Photoacoustic Tomography
A. Sadeghi-Naini	09:55	Imaging-Based Analysis of Intratumour Heterogeneity for Monitoring Response to Anticancer Therapies

BREAK **10:10 - 10:40**

TISSUE CHARACTERIZATION & ELASTOGRAPHY II - Chaired by M. Oelze

S. Ghai	10:40	Clinical Applications of 29 MHz Micro-Ultrasound for Targeted Prostate Biopsies
D. Rohrbach	10:55	Prostate Cancer Imaging at High Frequencies using Quantitative Micro-Ultrasound
E. Feleppa	11:15	3D QUS for Better Detection of Lymph Node Metastases and Improved Staging and Treatment of Cancer
T. Hall	11:35	Improving Specificity in Breast Imaging
P. Muleki-Seya	11:55	Nonlinear Ultrasound Parameters to Monitor Mitotic Catastrophe or Apoptosis in Cell Pellet Biophantoms

LUNCH **12:10 - 13:45**

THERAPY & THERAPY MONITORING II - Chaired by S. Liu

T. Porter	13:45	Cavitation-Enhanced Ultrasound-Mediated Tumor Ablation Nucleated with Phase-Shift Nanoemulsions
G. Czarnota	14:05	Ultrasound-Stimulated Microbubble Enhancement of Radiation Responses
G. Stanisz	14:25	MRI of Cancer Therapies
P. Kozlowski	14:45	Luminal Water Imaging- A Novel Quantitative MRI Technique for Prostate Cancer Diagnosis

BREAK **15:05 - 15:20**

A. Lau	15:20	Opportunities for Rapid MRI in Radiation Oncology
C. Heyn	15:35	Evolution of Perfusion Parameters in Brain Metastases Treated with Stereotactic Radiosurgery in the First Month after Treatment: Comparison of Dynamic Contrast Enhanced MRI and Intravoxel Incoherence Motion

CLOSING REMARKS **15:50-16:00**