McGill

Centre universitaire de santé McGill
McGill University Health Centre

DDTP Symposium

Novel Targeted Drug and Nanomedicine Approaches to the Radiotherapy of Human Cancers

Chaired by: Dr. Bassam Abdulkarim
(Chair of the McGill Division of Radiation Oncology)
and Dr. Bertrand Jean-Claude (DDTP Co-Director)

Friday, November 30, 2012

8:00 AM to 12:30 PM

Jeanne Timmins Amphitheatre

Montreal Neurological Hospital and Institute

presented by

McGill-CIHR
Drug Development
Training Program

CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Schedule

8:15 - 8:45	**Coffee/Registration**
8:45 – 9:35	**Dr. Amin Kassis**
9:35 – 10:25	**Dr. Katherine Vallis**
10:25 -10:40	**Coffee**
10:40 –11:30	**Dr. Bo Lu**
11:30 –12:20	**Dr. Agnès Pottier**

Dr. Amin Kassis, PhD

Professor, Harvard Medical School
Boston, MA

Targeting Diagnostic and Therapeutic Radionuclides to Solid Tumors

Enzyme-Mediated Cancer Imaging and Therapy (**EMCIT**) is a novel technology that aims to concentrate and permanently entrap radioimaging (^{18}F-/^{123}I-/^{124}I-labeled) and radiotherapeutic (^{131}I-/^{211}At-labeled) compounds specifically within solid human tumors. **EMCIT** is a method for enzymedependent, site-specific, *in vivo* precipitation of radionuclide-labeled pro-drugs within the extracellular spaces of primary solid tumors and their metastases. The approach will allow early detection (SPECT/PET) and treatment to be closely coupled with the particular advantage of moving intervention to a much earlier point in the path of progression and forestall the development of metastatic disease.

Dr. Katherine Vallis, PhD

UK Senior Research Group Leader
CR-UK/MRC Gray Institute for Radiation Oncology and Biology, Department of Oncology, University of Oxford, Oxford, UK

"Storming the citadel: the development of anti-cancer radiopharmaceuticals directed against intranuclear targets".

Nuclear localization of anticancer radiopharmaceuticals may increase DNA damage and, therefore, cell kill. This is particularly true of agents that incorporate radioisotopes that emit Auger electrons, because of their ultra short track length (in the nm to μm range). In general, cell-surface targets have been exploited for molecular imaging of cancer, because of their accessibility to circulating imaging probes. However, numerous attractive targets reside within the cell nucleus.

We have used several strategies to direct radionuclides to the nucleoplasm for both therapy and imaging. These include the use of uni- and bi-specific antibody-based vehicles, modified by the addition of cell-penetrating peptides and/or nuclear localizing signals.

In this presentation the current state-of-the-art in the field of theranostics specifically targeted to the nucleus of cancer cells will be reviewed, with an emphasis on the use of radioimmunoconjugates for this purpose.

Dr. Bo Lu, M.D. PhD

Professor, Department of Radiation Oncology
Thomas Jefferson University
Philadelphia, PA

Novel Radiotherapy Combinations for Managing Locally Advanced Lung Cancer

Standard care for localized advanced non-small cell lung cancers (LA-NSCLC) is concurrent cisplatin-based chemotherapy and radiation therapy. However, more than 70% of patients develop recurrence after initial response to the combined therapy. Therapeutic resistance is the likely culprit for mortality that prevails among lung cancer patients who we encounter in the clinic. Many clinical trials that integrated biological agents failed to improve the clinical outcomes set by the standard therapy. Changing landscape of lung cancer treatment focuses on driver mutations for lung cancer. Targeted therapeutic agents garnered impressive responses in the matched susceptible subtypes of lung cancer. Furthermore immunotherapeutic agents demonstrated surprising clinical efficacy in lung cancer, raising enthusiasms of combining them with radiotherapy, for potential synergistic abscopal effects. These advances will likely change how radiotherapy is utilized to treat locally advanced lung cancer.

Dr. Agnès Pottier, PhD

Research and Intellectual Property Manager.
Nanobiotix S. A.
Paris, FR

Nanoscale agents in medicine: New tools to achieve breakthrough in healthcare.

The application of nanotechnology to healthcare – has created an unprecedented opportunity to "twist" the original biological structures, bringing physical mode of action within cells using 'inert' engineered objects as nanometric tools. Nanobiotix, an oncology company, is developing nanoXray products, high density therapeutic. nanoparticles, designed to absorb X-rays and to deliver high dose of energy in the tumor cell without increasing the dose in healthy tissues, thereby offering the possibility of enlarging the therapeutic window of radiotherapy. Nanobiotix lead product NBTXR3 is in early clinical development in Europe. Collaborations with internationally renowned radiobiologists and radiation oncologists are actively established as strategy to improve knowledge and importantly to accelerate its clinical development.

Directions

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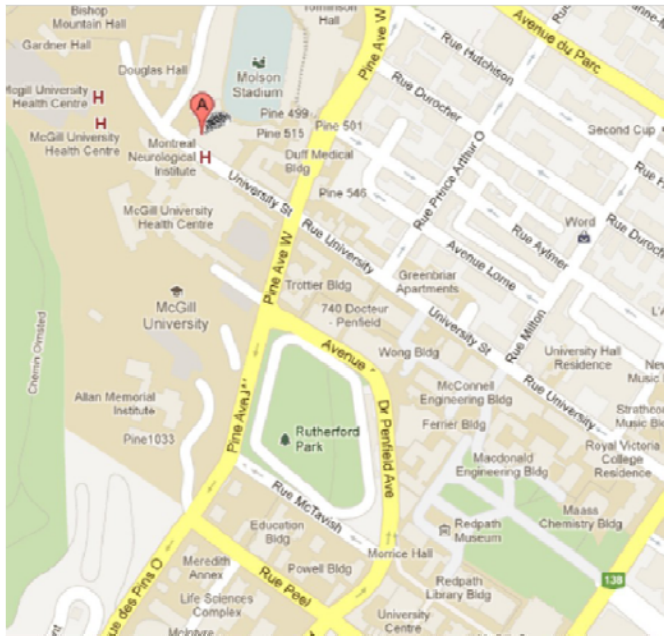

Drug Development Training Program

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