

UNITO-POLITO CONFERENCE SERIES IN CANCER

Imaging of Cancer Dynamics

March 7-9, 2018

“La Cavallerizza Hall”

University of Torino

Via Verdi 9-Torino

www.cancerto.it

PROGRAM

AIM OF THE WORKSHOP- Cancer is a multistep disease, which is inherently dynamic. Early steps in carcinogenesis are often extremely hard to describe as they involve a wide variety of interactions between normal and carcinogenic tissue and the microenvironment. At the same time, even when the tumor is already considered developed or already gave rise to metastasis, it is continuously changing to adapt to the local microenvironment and evade the immune system and the therapy. While traditional approaches often focus on a static and monotypic disease, it is now established that cancer evolves over time from both genetic and phenotypic points of view, therefore requiring a deep knowledge of the dynamic processes underlying cancer progression and response to treatment. Recent and tremendous technical advances in imaging technologies have boosted the use of live imaging in life science and medicine in general and in cancer research in particular. The use of non-invasive, high time and space resolution techniques has been fundamental in the progress of cancer research of the last years. Imaging techniques allow to resolve and describe accurately genetic variations, phenotypic switches, mechanisms of resistance and quiescence, mechano-biological and growth patterns. The University and the Polytechnic of Torino organize a workshop to discuss the applications of imaging to study the dynamic inherent nature of cancer in its most paradigmatic views and approaches: cancer cell biology, metabolism, metastatization, molecular level and quantitative approaches.

March 7th

12.00–14.00 Registration

IMAGING OF CANCER METABOLISM

14.15 – 15.00

Kevin BRINDLE- Department of Biochemistry. University of Cambridge- Cambridge (UK)

**Imaging tumour metabolism using hyperpolarized ¹³C-labelled cell substrates –
From mouse to man.**

15.00 – 15.45

Clemens LOWIK-Department of Radiology. Leiden University- Leiden (NL)

New optical imaging tools to image cancer and their translation to the clinic

15.45– 16.30

Vasilis NTZIACHRISTOS – Technical University of Munich- Munich (D)

New abilities in cancer imaging using multispectral optoacoustic tomography

16.30-16.45 short talk selected from the abstract

16.45-17.15 break

SUPER-RESOLUTION APPROACHES

17.15-18.00

Alberto DIASPRO- Italian Institute of Technology- Genova (I)

Liquid tunable microscopy to study chromatin-DNA

18.00-19.00- Keynote Lecture

Zena WERB- Department of Anatomy, University of California-San Francisco, (CA, USA)

Insights into breast cancer metastasis using single cell technologies

19.00 – 20.30 Peri-cena - POSTER DISCUSSION

20.30 Faculty dinner

March 8th

CANCER MOLECULAR DYNAMICS

08.30 – 9.15

Brent HOFFMAN- Department of Biomedical Engineering, Duke University -Durham, (NC-USA)

Visualizing Molecular Forces Across Specific Proteins in Living Cells

9.15-10.00

Andrea PICCO- Department of Biochemistry, University of Geneva- Genève, (CH)

The *in vivo* architecture of the exocyst complex visualised by quantitative fluorescence microscopy.

10.00-10.45.

Olivier PERTZ- Insitute of Cell Biology, University of Bern- Bern (CH)

Imaging MAPK signaling networks controlling cell fate decisions

10.45-11.00 short talk selected form the abstract

11.00-11.30 Break

DYNAMICS OF CANCER AND METASTAZING CELLS-I

11.30-12.15

Erik SAHAI -The Francis Crick Institute-London (UK)

Imaging Therapy Failure

12.15 -13.00

Gaudenz DANUSER- Department of Bioinformatics and Cell Biology , UT Sothwestern Medical Center- Dallas (TX, USA)

Relating shape and prosurvival signals in cancer cells

13.00 –13.30: lunch

13.30-15: poster discussion

DYNAMICS OF CANCER AND METASTAZING CELLS-I

15.00-15.45

Maria SOLEDAD SOSA- Icahn School of Medicine at Mount Sinai, New York (NY, USA)

The Biology of Cancer Dormancy: Relevance to Metastasis

15.45-16.30

Andrew EWALD- Department of Cell Biology, Johns Hopkins University- Baltimore (MD, USA)

Beyond invasion: metastatic dynamics during systemic spread and organ colonization

16.30-17.15

John CONDEELIS- Albert Einstein College of Medicine- New York (NY, USA)

Large volume high resolution intravital imaging identifies the mechanisms of vascular invasion and metastatic seeding during breast cancer progression

17.15 -18.00

Ernst STELZER- Buchmann Institute for Molecular Life Sciences, Goethe University- Frankfurt (D)

Investigating and analyzing dynamic three-dimensional multi-cellular clusters

18-18.15 Break

18.15-19.00

Peter FRIEDL- Institute for Molecular Life Sciences, Radboud University, Nijmegen (NL)

Plasticity of Cancer Cell Invasion

19.15-19.30 short talk selected from the abstract

March 9th

DYNAMICS OF CANCER-STROMA INTERACTIONS

08.30 – 9.15

Mikala EGEBLAD- Cold Spring Harbor Laboratory, Cold Spring Harbor, (NY, USA)

Neutrophil Extracellular Traps Promote Breast Cancer Metastasis and Escape from Dormancy"

9.15 -10.00

Mark VENDRELL- Queen's Medical Research Institute, University of Edinburgh- Edinburgh (UK)

Dynamic Activatable Fluorophores

10.00-10.45

Vincent CHAN - Department of Pathology, University of California at San Francisco- San Francisco (CA,USA)

Mapping the immune landscape of human tumor microenvironments using multi-scale immunoprofiling strategies

10.45 -11.00 Break

IMAGING BASED MODELLING

11.00-11.45

Kristine SWANSON- Department of Neurosurgery, Mayo Clinic- Phoenix (AR,USA)

11.45 -12.30

Eiko ENDERLING – Integrated Mathematical Oncology, H.Lee Moffit Cancer Center, Tampa (FL,USA)

Local and systemic effects of cancer radiotherapy

12.30-13.15

Kevin PAINTER-Department of Mathematics, Heriot-Watt University- Edinburgh (UK)
Anisotropic models for glioma growth

13,15-13.30 short talk selected form the abstract

13.30-14.00 Lunch and end of the meeting