



UNIVERSITÀ
DI TORINO

COMPLEX SYSTEMS FOR QUANTITATIVE BIOMEDICINE



Workshop: “Advances in AI-based approaches to cancer imaging and molecular profiling”

July 4, 2023, 10:00-13:00 - MBC, Aristotele Room

Program

10:00 Welcome and introduction

10:15 – 11:00

“Radio-pathomics: a new generation of imaging biomarkers to empower precision medicine”.

Valentina Giannini

University of Torino

Recently, with the progress of technology, medical imaging is developing fast. Artificial intelligence applied to radiological and pathological images can provide countless biomarkers to significantly improve, among others, detection, grading, staging, tumor characterization, evaluation of therapy response, prediction of prognosis and overall survival. Topics will include principles of AI applied to medical images and applications, covering both research topics and clinically available systems.

11:00 – 11:45

“Machine-learning and transcriptional classification of cancer”

Enzo Medico

University of Torino

Identification of transcriptional subtypes associated with different clinical, biological and pharmacological behaviour of tumours relies on expression measurements of specific gene sets and associated computational algorithms. I will present recent advances and examples of how machine learning-based approaches are leading to improvements in the field.

11:45 – 12:00 Break

12:00 – 13:00

“Deciphering tumor physiology from spatial data”

Jeff Chuang

The Jackson Laboratory for Genomic Medicine, Farmington, CT, USA

The explosion of spatial profiling technologies has created new opportunities to understand the cell types, cell states, and cell-cell interactions that drive cancer. I will present studies that distinguish such behaviours from spatial transcriptomics, proteomic, and histopathology images. Topics will include spatiotemporal evolution of melanoma during BRAF/MEK treatment, quantification of immune cell synapses in the tumor microenvironment, and analysis of 3D cellular organization in cancer organoids.

Webex link: <https://unito.webex.com/meet/enzo.medico>