



SAPIENZA
UNIVERSITÀ DI ROMA

DIPARTIMENTO DI
MEDICINA SPERIMENTALE

Summer School in THEORIES IN BIOLOGY, DEVELOPMENT AND CANCER

Rome, May 2019

Sapienza University (Rome, Italy) organizes a Summer School in THEORIES IN BIOLOGY, DEVELOPMENT AND CANCER, which will be held in May 2019, in Rome (Italy).

Overview

Over half a century ago, the pathologist Leslie Foulds stated: "...no theory of cancer--or of biology-- is acceptable unless it comprehends neoplasia as one of the possible consequences of biological organization." This state of affairs has not changed much since. The main objective of the course is to provide the framework to place cancer as a "possible consequence of biological organization". From this perspective, we will elaborate a systemic approach for cancer research based on principles of organismal and developmental biology. During the course, we will explore the benefits of this systemic approach to the clinical management of cancer, by focusing on new targets and therapeutic strategies. A significant body of evidence is currently evidencing that by targeting the cell-tumor microenvironment cross talk, cancer control and tumor reversion can both be achieved without significant side effects. In addition, we expect that this approach will open the way to a different way in mathematical modeling of biological processes, especially when focusing on cell phenotypic transitions.

See here for downloading the call: [italian version](#), [english version](#)

Activity Section I

How does cancer fit into science in general and biology in particular?

History of cancer research

The great divide: Reductionism versus organicism

Evolutionary perspective in Biology

Cancer and developmental biology

Epistemological, philosophical and methodological issues

Principles of theory of organisms

Big-data and personalized medicine in cancer

How statistics can help you?

Modeling form and biological Principles

Activity Section II

Carcinogenesis, pathogenesis, cancer as a disease

Epidemiology of cancer

Chemical and Physical carcinogenesis

Environmental carcinogenesis

Endocrine disruptors and endocrine-related cancers

Inflammation, infection and cancer

Diet, Obesity, Metabolism and cancer

TOFT vs SMT

Phenotypic transitions in cancer biology

Motility and invasiveness. The metastatic process and the default state of the cell

Activity Section III

Clinical management: basic insights
Principles of cancer chemotherapy
Principles of Endocrine manipulation
Principles of Immunology-based treatment
Tumor heterogeneity and Resistance-based mechanisms
Basic of Tumor reversion: the tumor microenvironment as a target
Tumor treatment and Regenerative Medicine
Why a cancer bearing patients die? Putting back the individual at the center of clinical study

Director of the Summer School

Prof. Mariano Bizzarri

Associated Directors:

Prof. Carlos Sonnenschein (Boston), Prof. Giuseppe Longo (Paris), Prof. Cinzia Marchese (Roma).

Admission requirements:

Graduated in Biology, Biotechnology, Pharmacy, Physics, Chemistry, Philosophy, and Medicine; Ph.D. as well as post-doc students. A maximum number of 50 students will be admitted. Selection will be performed according to submitted degrees. Auditor allowed (max. 10).

Educational goals:

The School envisages the final release of a total of CFUs of 10 (250 hours total work for students, calculated as formal lectures and workout-discussion exercises). A certificate of attendance will be issued in the case of passing the final exam.