Translational Medicine-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Translational Medicine

August 5-7, 2013 Holiday Inn Chicago-North Shore, USA

The multi-scale causality of human cancer: An obstacle in the clinical practice

Fabio Grizzi

Humanitas Clinical and Research Center, Italy

Abstract

Cancer is a heterogeneous disease: more than 100 types of human cancer have been described. This phenotypical variability is what primarily determines the *self-progression* of neoplasia and its response to therapy. Variability in cell response has important clinical implications. It is now known that in a heterogeneous population, patients may display a multiplicity of genetic variations that respond differently to a given medical intervention. The same treatment could be of benefit to some patients yet harmful to others. Human carcinogenesis is a dynamical process that depends on a large number of variables and is regulated at multiple *spatial* and *temporal* scales and whose behavior does not follow clearly predictable and repeatable pathways. This multiple scale causality not only recognizes multiple processes and controls acting at multiple scales. In other words, the observed phenomenon at each scale has structural and behavioral properties that do not exist at lower or higher organizational levels. To understand human cancer as a complex system we need to determine the type of data that needs to be collected at each level of organization, the boundary conditions to use when describing the disease, and the technologies and approaches best suited to reveal its underlying biological behavior. This "quantitative" way of thinking that unites physicians, biologists, mathematicians and epidemiologists, may help to discover new biomarkers with potential clinical value.

Biography

Fabio Grizzi graduated in Biological Sciences from the University of Milan in 1995 and, in the year, received the Steven Newburgh Annual Award for his contributions to the field of basic and applied biomedical research. In 2008, he was invited to become a Member of the National Cancer Institute-sponsored Pilot Cancer Antigen Prioritization Process, of the US National Institute of Health. He is currently working in the Laboratory of Molecular Gastroenterology of the Humanitas Clinical and Research Center, Milan, Italy. He has published more than one hundred peer-reviewed articles twenty-three book chapters' book, and has recently been commissioned by Springer Publishing to prepare a book entitled "The Complexity of Cancer".