Dynamics of Cancer Resistance to Therapy

Cristian Tomasetti [1]

Abstract

Resistance is a fundamental problem in the treatment of cancer, strongly limiting the probability of treatment success. There are multiple mechanisms by which such resistance may develop and many mathematical models may be found in the literature. After briefly reviewing few of them, I will present some of my related work on this topic. In particular I will address questions like whether the dynamics of drug resistance is dependent on the cancer turnover rate, and what is the probability to have developed such resistance by the time of cancer detection. Finally I will introduce a new model proposal for the dynamics of imatinib-treated chronic myeloid leukemia. This is joint work with Doron Levy (Department of Mathematics and CSCAMM, University of Maryland).

[1]Applied Mathematics, Statistics and Scientific Computation Program, Department of Mathematics and Center for Scientific Computation and Mathematical Modeling, University of Maryland, College Park, MD 20742, USA; cristian@math.umd.edu.