

Tommaso Lorenzi (University of St Andrews)

Partial differential equation models of evolutionary and spatial dynamics of cancer cell populations

Abstract

A growing body of research indicates that mathematical modelling can complement experimental cancer research by offering alternative means of interpreting experimental data and by enabling extrapolation beyond empirical observation. This talk deals with mathematical models formulated in terms of nonlinear partial differential equations which can be used to study evolutionary and spatial dynamics of cancer cell populations. I will present a number of results which illustrate how analysis and numerical simulation of these equations can help to uncover fresh insights into the critical mechanisms underpinning tumour progression and the emergence of resistance to cytotoxic therapy.