Models of Tumor Growth and Therapy

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Models of tumor growth are now commonly used to predict the evolution of the disease based on images. These models contain several levels of complexity, both in terms of the biological effects and mechanical or mathematical description. The number of scales, from molecules to the organ and entire body, explains partly the complexity of the problem.

These models serve to predict the evolution of cancers in medical treatments, to understand the biological effects that permit tumor growth, the optimal therapy and, in some cases, their implication in therapeitic failures (resistance).

In this talk I shall give a general presentation of the field and focus on two aspects. I shall firstly present a multiscale approach to mechanical models of tumor growth and secondly, models of resistance to therapy and treatment optimization.