MATHEMATICAL AND COMPUTATIONAL MODELS FOR TUMOR EVOLUTION AND THERAPY

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ABSTRACT

Mathematical models are emerging as powerful tools for supporting clinicians and biologists in the field of modern oncology. They not only play a pivotal role in understanding the complex biological mechanisms driving cancer onset and development, but also serve as a powerful tools for predicting cancer response to therapies. In the latter case, these models provide a solid foundation for exploring various therapeutic strategies, allowing for more accurate predictions of clinical outcomes and optimizing personalized treatment.

Within this framework, the present minisymposium will explore the mathematical modeling of tumor evolution, with a particular focus on cancer growth and its response to therapeutic interventions. A particular attention will be give to the mechanical aspects of tumor cells and aggregates as long as angiogenesis and multi-physics and multi-scale interactions between cancer cells, therapies and the tumor microenvironment. Moreover, this minisymposium will focus on the integration of advanced mathematical and numerical frameworks with patient-specific data, aiming to enhance quantitative predictions and promote a more targeted and effective approach to cancer care.