ID de la contribución : **14** Tipo : **no especificado**

Cancer Dynamics: Tumor-Immune Interactions

In this talk we present our work in Dynamics and Physics of Cancer [1,2,3,4,5]. In particular, our study uses in silico experiments and mathematical analyses to characterize the transient and asymptotic dynamics of the cell-mediated immune response to tumor growth. An hybrid probabilistic cellular automaton model describing the spatio-temporal evolution of tumor growth and its interaction with the cell-mediated immune response is developed. The model parameters have been adjusted to an ordinary differential equation model, which has been previously validated [3] with in vivo experiments and chromium release assays. We utilize the cellular automaton model to investigate and discuss the capacity of the cytotoxic cells to sustain long periods of tumor mass dormancy [5], as commonly observed in recurrent metastatic disease.

Summary

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