# Tumor phenomenology in cell-based computer simulations.

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Cell-based computer simulations of tumor growth capture phenomena at many scales, both in time and in space. More importantly, cell-based simulations take into account events in individual cells – like mutations that lead to different phenotypes – that are subsequently amplified by cell-proliferation. These features lead to an increased computational complexity but they also allow to peek into the complicated dynamics of cancer and synthesize a nontrivial structural phenomenology of growing tumors. Here we describe our cell-based computer program for the simulation of tumor growth [1,2], and show how it has been exploited to obtain phenomenological models that bridge different space-time scales and help in understanding the biology of cancer [3-6].

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