**Biological lattice-gas cellular automaton models for the analysis of collective effects in cancer tissue**

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Cancer invasion may be viewed as collective phenomenon emerging from the interplay of individual biological cells with their environment. Cell-based mathematical models can be used to decipher the rules of interaction. In these models cells are regarded as separate movable units.

Here, we introduce an integrative modelling approach based on mesoscopic biological lattice-gas cellular automata (BIO-LGCA) to analyse collective effects in cancer invasion. This approach is rule- and cell-based, computationally efficient, and integrates statistical and biophysical models for different levels of biological knowledge. In particular, we provide BIO-LGCA models to analyse mechanisms of invasion in glioma and breast cancer cell lines.

Ref.: Deutsch, A., Dormann, S.: Cellular automaton modeling of biological pattern formation: characterization, applications, and analysis. Birkhauser, Boston, 2018