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Nota di contenuto	Part I. Theory: 1. Introduction; 2. Biological background; 3. Continuum tumor modeling: single phase; 4. Analysis and calibration of single-phase continuum tumor models; 5. Continuum tumor modeling: multiphase; 6. Discrete cell modeling; 7. Hybrid continuum -- discrete models; 8. Numerical schemes -- Part II. Applications: 9. Continuum tumor modeling: a multidisciplinary approach; 10. Agent-based cell modeling: application to breast cancer.
Sommario/riassunto	Mathematical modeling, analysis and simulation are set to play crucial roles in explaining tumor behavior, and the uncontrolled growth of cancer cells over multiple time and spatial scales. This book, the first to integrate state-of-the-art numerical techniques with experimental data, provides an in-depth assessment of tumor cell modeling at multiple scales. The first part of the text presents a detailed biological

background with an examination of single-phase and multi-phase continuum tumor modeling, discrete cell modeling, and hybrid continuum-discrete modeling. In the final two chapters, the authors guide the reader through problem-based illustrations and case studies of brain and breast cancer, to demonstrate the future potential of modeling in cancer research. This book has wide interdisciplinary appeal and is a valuable resource for mathematical biologists, biomedical engineers and clinical cancer research communities wishing to understand this emerging field.

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