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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	An overview of the Translational Dilemma and the need for Translational Systems Biology of inflammation -- Part I: Complex Systems Methods and Applications -- Translational Equation-based Modeling -- Agent-based Modeling in Translational Systems Biology -- Analysis of Heart Rate Variability -- Analysis of Ventilatory Pattern Variability -- Part II: Translational Modeling of Sepsis and Trauma -- Disorder of Systemic Inflammation in Sepsis and Trauma: A Systems Perspective -- Multi-scale equation-based models: Insights for Inflammation and Physiological Variability -- Integrating Data Driven and Mechanistic Models of the Inflammatory Response in Sepsis and Trauma -- In silico Trials and Personalized Therapy for Sepsis and Trauma -- Part III: Translational Modeling of Wound Healing -- Disorder of Localized Inflammation in Wound Healing: A Systems Perspective -- Equation-based Models of Wound Healing and Collective Cell Migration -- Agent-based Models of Wound Healing -- Part IV: Translational Modeling of Host-pathogen Interactions -- Modeling Host-Pathogen Interactions in Necrotizing Enterocolitis -- Modeling Host-Vector-Pathogen Immuno-inflammatory Interactions in Malaria --

Sommario/riassunto

The Translational Dilemma, the difficulty in achieving effective translation of basic mechanistic biomedical knowledge into effective therapeutics, is the greatest challenge in biomedical research. Nowhere is this more apparent than in understanding and manipulating the acute inflammatory response in the settings of sepsis, trauma/hemorrhage, wound healing, and related processes. The burgeoning fields of complex systems analysis and computational biology offer researchers a pathway towards addressing the Translational Dilemma. Complex Systems and Computational Biology Approaches to Acute Inflammation presents the current state of the art of multi-disciplinary and systems-oriented research approaches to complex diseases arising from and driven by the acute inflammatory response. The chapters in this volume provide an introduction to different types of computational modeling, and how these methods can be applied to specific inflammatory diseases, with a focus on providing readers with a roadmap for integrating advanced mathematical and computational techniques with traditional experimental methods. By presenting the role of computational modeling as an integrated component of the research process, Complex Systems and Computational Biology Approaches to Acute Inflammation offers a window into the future of biomedical research.