Analyzing T Cell Responses: How to analyze cellular immune responses against tumor associated antigens

Written for a specialized audience of clinical investigators interested in the strategic planning of monitoring aspects of clinical protocols, this book reviews, describes, categorizes and provides a critical assessment of all assays that have been used for the monitoring of antigen-specific immune responses, emphasizing a global approach to the analysis of T cell mediated target/host interactions at the systemic and the peripheral level when such interactions are supposed to occur.

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The tools described here could be utilized for the search of surrogate biomarkers predictive of treatment responsiveness and/or clinical outcome that are of interest to the biotechnology industry. Biomarker discovery, validation and utilization for class prediction can only be rationally achieved through a comprehensive review of available technologies and the understanding of their unique advantages and limitations. In detail, this book provides an overview of antigen-specific immune biology in human models of tumor and viral disease, discusses modulation of such responses through immune escape and presents cellular assays (cytoxicity, proliferation, cytokine production using ELISPOT, intracellular staining or cytometric assessment, detection of antigen-specific T cells with tetrameric HLA/epitope complexes or MHC-IG dimers, T cell receptor analysis, assessment of T cell receptor/HLA interactions using peptide/HLA-Green Fluorescent Protein complexes incorporation) and molecular assays including quantitative real-time PCR and gene profiling for evaluation of systemic and peripheral immune responses. All chapters were prepared by individuals who pioneered the utilization of such assays and, therefore, provide an in depth overview of the potential of each individual assay.