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Patterns; 2.2.2 Host Cellular Sensors; 2.2.2.1 Dendritic Cells; 2.2.2.2 Mast Cells; 2.2.3 Nonpeptide MHC Ligands Triggering Invariant T-cell Receptors; 2.3 Translating Innate Immune Activation into Regulatory Circuits: Molecular Pathways Shaping Adaptive Immunity; 2.3.1 TLR-initiated Signaling Cascades; 2.3.2 Molecules Involved in Recruiting Effector Cells; 2.3.2.1 Defensins; 2.3.2.2 Chemokines
2.3.3 Molecules Involved in T and B Cell Differentiation2.3.3.1 Th1-inducing Cytokines; 2.3.3.2 Th2-inducing Cytokines; 2.4 Implications for Vaccine Development; References; 3 Adjuvant-induced Th2- and Th1-dominated Immune Responses in Vaccination; 3.1 Introduction; 3.2 The Two-Signal Model of Adjuvant-induced Immune Activation; 3.3 Th1 and Th2 Induction by Vaccine Adjuvants; 3.4 Antigen Dose Effects; 3.5 The Three-signal Model of Adjuvant-induced Immune Activation; 3.6 Th2 Induction by Adjuvants; 3.7 Differential Activation of DCs; 3.8 Inappropriate Th1/Th2 Responses to Vaccines
3.9 Human Th2 vaccines3.10 Human Th1 Vaccines; 3.11 Conclusion; References; 4 Memory; 4.1 Introduction; 4.2 Characteristics of Memory Cells; 4.3 CD8+ T Cell Memory; 4.3.1 Phenotyping Memory CD8+ T Cells; 4.3.2 Enhanced Responsiveness of Memory CD8(+) T cells: Potential Mechanisms; 4.3.3 Generation of Memory CD8+ T Cells; 4.3.4 Maintaining CD8+ T Cell Memory; 4.3.5 Models of CD8+ T cell Memory Generation; 4.4 CD4+ T Cell Memory; 4.4.1 Differentiation of Effector and Memory CD4+ T Cells; 4.4.2 Phenotype of Memory CD4+ T Cells; 4.4.3 Memory Generation and Maintenance
4.4.4 Trafficking of Memory CD4+ T Cells4.5 B cell Memory; 4.5.1 Generation of B Cell Memory; 4.5.2 Maintenance of B Cell Memory; 4.6 Conclusions; Acknowledgements; References; 5 T Cell-based Vaccines; Summary; 5.1 Introduction; 5.2 Ex-vivo Detection of Antigen-specific T Cells; 5.3 In-vivo Kinetics of Antigen-specific T Cell Responses; 5.4 Effector Function and Subtypes of Effector T Cells; 5.5 T Cell Receptor Repertoire, Avidity Maturation, and Epitope Competition; 5.6 Functional Heterogeneity of T Cell Memory; 5.7 Vaccination Strategies and Their Efficacy for T Cell-based Vaccination
5.8 Concluding Remarks

Sommario/riassunto

The protection mode of most available vaccines is based on antibody responses. Since efficient immune responses to many pathogens rely on activating all arms of the immune system, traditional vaccine development does not provide efficient protection against many diseases. Novel vaccination strategies need to allow presentation of antigens that activate the full array of the immune response in the right composition and should prevent pathogen entry by mobilizing the mucosal immune response. New technological advances optimize the immunogenicity of 'live' and sub-unit vaccines.This book offe