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# Preface

*Vaccine Adjuvants: Preparation Methods and Research Protocols* was developed to promote the optimal use of immunological adjuvants in preclinical studies. The book's primary focus is on the use of adjuvants in vaccination studies in order to induce potent immune responses against either antigens derived from infectious organisms or cancer-associated antigens. In general, our work should be of interest and significant value to researchers who need to induce potent immune responses against their respective antigens, including those involved in the development of vaccines for infectious diseases, cancers, fertility regulation, and autoimmune disorders. In addition, the book should also be valuable for those involved in the selective manipulation of the immune response, including virologists, bacteriologists, parasitologists, and immunologists. Each chapter describes a single approach, but includes suggestions as to why the specific adjuvant might be preferred for a given antigen, depending on which type of immune response is desired. Alternative adjuvant approaches are presented in detail in such a manner as to permit researchers to choose those most efficacious for their specific indications.

The main focus of *Vaccine Adjuvants: Preparation Methods and Research Protocols* is on the use of adjuvants in vaccines, since it is already clear that the new generation of vaccines—based on recombinant proteins, synthetic peptides, or DNA—will require adjuvants for optimal efficacy. Each chapter describes in detail the preparation and characterization of an adjuvant or an adjuvant formulation, including recommended protocols for its *in vivo* evaluation in preclinical studies. Whenever possible, detailed adjuvant preparation and characterization methods are presented in each chapter by the individuals who originally invented or developed the approaches, including specific examples for guidance. The preparation methods described range from simple mixing of an antigen with a preformed adjuvant, to a complex formulation process requiring the antigen to be physically associated within, or entrapped within, an adjuvant formulation. In all chapters, practical advice and guidance is provided to allow optimal adjuvant preparation. Each chapter also includes detailed notes, which highlight important practical points, and warns against potential pitfalls and problems. Following adjuvant preparation, steps are of-

ten necessary to characterize the vaccine/adjuvant formulation, to ensure that the preparation was successful, and to allow quantitative estimation of important parameters, including antigen incorporation or association, and antigen integrity. Whenever necessary, these steps are described in detail, with full practical guidance and examples of the expected results. In addition, an overview chapter describing the evaluation of novel adjuvants in clinical studies is included. Also included is a chapter describing recommended guidelines to evaluate the safety of novel adjuvants and adjuvant formulations.

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