pathogen have led to the concept of the modern subunit vaccine. For example, hybridoma technology can be utilized to pinpoint the immuno-critical epitopes of a pathogen, and genetic engineering or peptide technology can be used to create vaccine antigens that could not otherwise be acquired in sufficient quantity or purity. However, as all who work in vaccine development can attest, many vaccines that look promising in the laboratory fail the test of the clinical trial, reminding us of deficiencies in our knowledge. Nevertheless, the information garnered from vaccine "failures" may provide the inspiration for future successes. For instance, the shortcomings of the first subunit malaria sporozoite vaccines accelerated efforts to investigate the safety and efficacy of newer adjuvants in humans and focused interest on cellular immune mechanisms of protection against *Plasmodia*.

In *Vaccines*, the editor, Ronald W. Ellis, and contributors consider new technologies in molecular biology, biochemistry, and immunobiology as they apply to vaccine development. Fourteen of the 20 chapters focus on vaccines against human viral, bacterial, and parasitic infectious diseases, and another discusses antitumor vaccines. Later chapters review vaccinia- and adenovirus-based expression vectors, applications of anti-idiotypic antibodies as vaccines, the use of synthetic peptides in subunit vaccines, and passive immunoprophylaxis with monoclonal antibodies. There is an enthusiastic and thought-provoking contribution on adjuvants and their mode of action. Each chapter on a particular vaccine tell its own interesting story. For instance, the evolution of *Haemophilus influenzae* b (Hib) vaccines is reviewed from the first polysaccharide vaccine to the currently licensed conjugate vaccines, which effectively overcome the nonresponsiveness of the T-independent polysaccharide immunogen in young children. All the conjugate vaccines markedly increase the immunogenicity of the polysaccharide antigen and also alter the antibody subclass response to the polysaccharide. In addition, the choice of protein conjugate may affect the age at which a child is immunologically capable of responding, and monkey studies suggest that immunologic priming with the conjugate protein may affect the subsequent antibody response to the polysaccharide. The Hib conjugate vaccines are now licensed and available to protect infants and children from life-threatening invasive disease. Furthermore, the lessons learned about polysaccharide-protein conjugate vaccines can be applied to other pathogens, such as the pneumococcus and meningococcus. I found the chapter on helminth vaccines fascinating. In the cases of schistosomiasis and filariasis, our biotechnology has put us in the interesting position of knowing more about the protein and carbohydrate antigens that can be identified at various stages of the life cycles of these complex organisms than we do about the biology of the parasites. In particular, we are reminded that the lack of a suitable test animal is a major impediment to progress in vaccinology, and technological advances thus far have not found a way to replace the experimental model.

In the preface, the reader is informed that this volume is not intended to cover vaccinology in an exhaustive manner, but rather to illustrate the modern process for developing a vaccine through pertinent examples. The book clearly achieves this goal and can be recommended as a source of current information on a select number of vaccines in an area where rapid progress is being made. For those who desire a truly comprehensive work on vaccines, *New Generation Vaccines*, edited by Woodrow and Levine (Dekker, 1990), is an excellent resource.

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