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Book Review

Vaccine Adjuvants and Delivery Systems. M. Singh (Ed.). Wiley, 2007. Hardcover, 449pp. ISBN: 978-0471739074

There has recently been a renaissance in the pharmaceutical industry's interest in vaccines. Over 40 years ago, a combination of a lack of profitability and dubious social forces led to a decreasing emphasis on the development of vaccines, despite a general acknowledgment that vaccines are one of our most effective weapons against infectious diseases. Recently, the introduction of efficacious vaccines against hepatitis, childhood pneumonia, rotavirus, and cervical cancer, among other diseases, has raised hopes that this approach can effectively eliminate a substantial portion of the death due to viral, bacterial, and parasitic agents. A major disappointment has been, however, the lack of contribution of modern biotechnology to the vaccine world. It was thought that the ability to clone, express, and purify recombinant proteins and DNA constructs containing key antigenic components of pathogens would make the production of new vaccines a much more straightforward process. The major exception to this failure appears to be the virus-like particles, which while made recombinantly, retain a repetitive epitope nature that makes them highly immunogenic. It has been apparent for some time that the solution to this problem is the introduction of new adjuvants which can both increase the immunogenicity of appropriate antigens as well as direct the response along the necessary, protective immunological pathway(s). The subject volume admirably reviews current efforts in this area as well as provides an encouraging glimpse into the future of synthetic vaccines.

The volume opens with the best historical review of adjuvants that I have ever read. Ott and Van Nest should be thanked for this rigorous, comprehensive analysis of the field, which is both illuminating and thought provoking. It is followed by excellent background chapters concerning antigen processing and mechanisms of adjuvant action with an appropriate emphasis on recent findings in Toll receptor biology. This is followed by a series of 13 chapters that review the majority of the currently most investigated adjuvant and delivery approaches. Especially comprehensive are chapters detailing aluminum salt adjuvants, MF59, CpG oligodeoxynucleotides, small molecule immunopotentiators, ISCOMS, PLGA microparticles, mucosal adjuvants, and cytokines. I found especially intriguing the chapter concerning archaeosome based adjuvants, an area to be watched in the future. The book concludes with two important chapters on safety issues. The editor has done an excellent job of surveying the field. The individual chapters are well written and at a level appropriate to both the beginner and the adept. My only criticism is the poor index, which fails to adequately survey the contents. It has been several years since a volume like this has appeared so it is very timely. One can only hope that future reviews of this important area will be of similar high quality.

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