

Veterinary Vaccines

Current Innovations and Future Trends

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Published: October 2020. **Pages:** vi + 238

ISBN: Book: 978-1-913652-59-3. Ebook: 978-1-913652-60-9

Price: £199, \$250

Published by: Caister Academic Press www.caister.com

The global demand for more, affordable, safe, and exotic foods in recent years has led to the increased use of intensive farming: this is closely associated with increased outbreaks of a variety of animal and zoonotic diseases. In addition to infectious diseases, cancer in animals is of key importance and research in this area has applications in humans that can be more relevant than studies from murine models. The urgent need for the development of new efficacious vaccines to control animal diseases has never been clearer.

This concise book captures the essence of current and future shifts in vaccine development research that will likely transform our understanding of methods to stimulate specific and protective immune responses to infectious diseases, and to offer improved therapeutic applications for oncology patients. The book opens with a chapter on reverse vaccinology and systems vaccinology approaches that should lead to more effective vaccines with fewer side effects. This is followed by a chapter describing recent developments in cancer immunotherapy and vaccination. Additional chapters provide updates on mucosal vaccines in the bovine context, adjuvants, transboundary diseases of livestock, and maternal and neonatal immunization. The book closes with a timely discussion of the newest vaccine modality currently being evaluated to control the human COVID19 pandemic, mRNA vaccines.

This book is essential reading for everyone working with vaccine development, from the PhD student to the experienced scientist, in academia, the pharmaceutical or biotechnology industries, and in clinical environments.

Chapter 1. New Approaches to Vaccinology Made Possible by Advances in Next Generation Sequencing, Bioinformatics and Protein modeling (*Amelia R. Woolums and Cypriana Swiderski*)

Chapter 2. Cancer Vaccines (*Philip J. Bergman*)

Chapter 3. Bovine Mucosal Vaccines: Challenges and Opportunities (*Paola Elizalde and Philip J. Griebel*)

Chapter 4. Adjuvants: State of the Art and New Developments (*Sylvia van Drunen Littel-van den Hurk and George Mutwiri*)

Chapter 5. Challenges in Having Vaccines Available to Control Transboundary Diseases of Livestock (*Charles E. Lewis and James A. Roth*)

Chapter 6. Neonatal Vaccination and Maternal Immunization (*Heather L. Wilson and Volker Gerdtts*)

Chapter 7. RNA Vaccines for Infectious Diseases of Animals: A Future Trend (*Laurel J. Gershwin*)

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