

# Veterinary Vaccines

## Current Innovations and Future Trends

### Editors:

#### **Laurel J. Gershwin**

School of Veterinary Medicine  
University of California, Davis  
Davis, CA  
USA

#### **Amelia R. Woolums**

College of Veterinary Medicine  
Mississippi State University  
Mississippi State, MS  
USA



**Copyright © 2020**

Caister Academic Press, UK

[www.caister.com](http://www.caister.com)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher. No claim to original government works.

ISBN: 978-1-913652-59-3 (paperback)

ISBN: 978-1-913652-60-9 (ebook)

DOI: <https://doi.org/10.21775/9781913652593>

# Contents

<b>Chapter 1</b> .....	<b>1</b>
New Approaches to Vaccinology Made Possible by Advances in Next Generation Sequencing, Bioinformatics and Protein modeling	
<i>Amelia R. Woolums and Cypriana Swiderski</i>	
<b>Chapter 2</b> .....	<b>31</b>
Cancer Vaccines	
<i>Philip J. Bergman</i>	
<b>Chapter 3</b> .....	<b>61</b>
Bovine Mucosal Vaccines: Challenges and Opportunities	
<i>Paola Elizalde and Philip J. Griebel</i>	
<b>Chapter 4</b> .....	<b>107</b>
Adjuvants: State of the Art and New Developments	
<i>Sylvia van Drunen Littel-van den Hurk and George Mutwiri</i>	
<b>Chapter 5</b> .....	<b>149</b>
Challenges in Having Vaccines Available to Control Transboundary Diseases of Livestock	
<i>Charles E. Lewis and James A. Roth</i>	
<b>Chapter 6</b> .....	<b>189</b>
Neonatal Vaccination and Maternal Immunization	
<i>Heather L. Wilson and Volker Gerdts</i>	
<b>Chapter 7</b> .....	<b>223</b>
RNA Vaccines for Infectious Diseases of Animals: A Future Trend	
<i>Laurel J. Gershwin</i>	

## Current books of interest

- Climate Change and Microbial Ecology 2020
- Alphaherpesviruses 2020
- Legionellosis Diagnosis and Control in the Genomic Era 2020
- Bacterial Viruses: Exploitation for Biocontrol and Therapeutics 2020
- Microbial Biofilms: Current Research and Practical Implications 2020
- Astrobiology: Current, Evolving and Emerging Perspectives 2020
- *Chlamydia* Biology: From Genome to Disease 2020
- Bats and Viruses: Current Research and Future Trends 2020
- SUMOylation and Ubiquitination: Current and Emerging Concepts 2019
- Avian Virology: Current Research and Future Trends 2019
- Microbial Exopolysaccharides: Current Research and Developments 2019
- Polymerase Chain Reaction: Theory and Technology 2019
- Pathogenic Streptococci: From Genomics to Systems Biology and Control 2019
- Insect Molecular Virology: Advances and Emerging Trends 2019
- Methyloprophs and Methyloproph Communities 2019
- Prions: Current Progress in Advanced Research (Second Edition) 2019
- Microbiota: Current Research and Emerging Trends 2019
- Microbial Ecology 2019
- Porcine Viruses: From Pathogenesis to Strategies for Control 2019
- *Lactobacillus* Genomics and Metabolic Engineering 2019
- Cyanobacteria: Signaling and Regulation Systems 2018
- Viruses of Microorganisms 2018
- Protozoan Parasitism: From Omics to Prevention and Control 2018
- Genes, Genetics and Transgenics for Virus Resistance in Plants 2018
- Plant-Microbe Interactions in the Rhizosphere 2018
- DNA Tumour Viruses: Virology, Pathogenesis and Vaccines 2018
- Pathogenic *Escherichia coli*: Evolution, Omics, Detection and Control 2018
- Postgraduate Handbook 2018
- Enteroviruses: Omics, Molecular Biology, and Control 2018
- Molecular Biology of Kinetoplastid Parasites 2018
- Bacterial Evasion of the Host Immune System 2017
- Illustrated Dictionary of Parasitology in the Post-Genomic Era 2017
- Next-generation Sequencing and Bioinformatics for Plant Science 2017
- Brewing Microbiology: Current Research, Omics and Microbial Ecology 2017
- Metagenomics: Current Advances and Emerging Concepts 2017
- The CRISPR/Cas System: Emerging Technology and Application 2017
- *Bacillus*: Cellular and Molecular Biology (Third edition) 2017
- Cyanobacteria: Omics and Manipulation 2017
- Foot-and-Mouth Disease Virus: Current Research and Emerging Trends 2017