

METHODS IN MOLECULAR BIOLOGY

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Vibrio Cholerae

Methods and Protocols

Edited by

Aleksandra E. Sikora

*Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University,
Corvallis, OR, USA*

 **Humana Press**

Editor

Aleksandra E. Sikora
Department of Pharmaceutical Sciences
College of Pharmacy
Oregon State University
Corvallis, OR, USA

ISSN 1064-3745 ISSN 1940-6029 (electronic)
Methods in Molecular Biology
ISBN 978-1-4939-8684-2 ISBN 978-1-4939-8685-9 (eBook)
<https://doi.org/10.1007/978-1-4939-8685-9>

Library of Congress Control Number: 2018948674

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Cover illustration: This is *V. cholerae* N16961. Transmission electron microscopy photo by Suzanne. R. Lybarger and Aleksandra E. Sikora.

Printed on acid-free paper

This Humana Press imprint is published by the registered company Springer Science+Business Media, LLC part of Springer Nature.

The registered company address is: 233 Spring Street, New York, NY 10013, U.S.A.

Preface

Vibrio cholerae is a member of a range of natural aquatic ecosystems and serves as the most prominent of a number of *Vibrio* species. *V. cholerae* causes the devastating diarrheal disease, cholera, primarily in the developing countries of Asia, Africa, and other regions disrupted by climate change, other natural calamity, or war. The persistence of *V. cholerae* in natural habitats is a crucial factor in the epidemiology of cholera. Cholera remains one of the top global infectious disease threats and, therefore, understanding the fundamental mechanisms of *V. cholerae* virulence and environmental survival is a prerequisite for the development of new therapeutic treatments or preventative measures.

This book was prompted by the significance of *V. cholerae* as an infectious agent and the emergence of new methodologies. The scope of this book covers various approaches applied to studying the biology of *V. cholerae*: from basic microbiological techniques including laboratory maintenance, culturing, and phenotypic assays, different animal models (zebrafish, infant mice, fruit fly) developed to elucidate pathogenesis and determinants of environmental survival, isolation and characterization of outer membrane vesicles, to holistic approaches incorporating transcriptomics, proteomics, metabolomics, and high-throughput screening of natural product libraries. Thus, the contents of this book offer a head start for the novice microbiologist with the focus on *V. cholerae* as well as an enhancement of skills for experienced researchers and teachers of microbiology. The book is organized into independent and self-contained chapters, with an introduction that describes the methodology, clearly outlined materials and procedures, and notes to help the reader with potential troubleshooting.

I would like to thank, first and foremost, the expert friends and wise colleagues who shared their knowledge, time, and patience and contributed the chapters to this book. I want to acknowledge Prof. John Walker for his encouragement and guidance throughout the editing process as well as Ms. Anna Rakovsky and Kim Gratz for their excellent assistance in assembling the book. Lastly, but not least importantly, I want to thank my husband, Tim Weber, whose continuous love, encouragement, support, and vision stimulated and inspired me through the creative process of this book.

Corvallis, OR, USA

Aleksandra E. Sikora

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Contributors

- JULIO C. AYALA • *Department of Microbiology, Biochemistry and Immunology, Morehouse School of Medicine, Atlanta, GA, USA; Department of Microbiology, University of Alabama at Birmingham, Birmingham, AL, USA*
- JORGE A. BENITEZ • *Department of Microbiology, Biochemistry and Immunology, Morehouse School of Medicine, Atlanta, GA, USA*
- KYLE D. BRUMFIELD • *Department of Biological Sciences, Plymouth State University, Plymouth, NH, USA*
- ANDREW CAMILLI • *Tufts University School of Medicine, Boston, MA, USA*
- BAILEY M. CARIGNAN • *Department of Biological Sciences, Plymouth State University, Plymouth, NH, USA*
- ANKUR B. DALIA • *Department of Biology, Indiana University, Bloomington, IN, USA*
- THOMAS O. EICHMANN • *Institute of Molecular Biosciences, University of Graz, Graz, Austria*
- CLAUDIA C. HÄSE • *Department of Biomedical Sciences, College of Veterinary Medicine, Oregon State University, Corvallis, OR, USA*
- JAY S. KIRKWOOD • *Department of Pharmaceutics, University of Washington, Seattle, WA, USA*
- PAUL KOHL • *Institute of Molecular Biosciences, University of Graz, Graz, Austria*
- JYL S. MATSON • *Department of Medical Microbiology and Immunology, University of Toledo College of Medicine and Life Sciences, Toledo, OH, USA*
- KERRY MCPHAIL • *Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR, USA*
- YUSUKE MINATO • *Department of Microbiology and Immunology, University of Minnesota Medical School, Minneapolis, MN, USA*
- KRISTIE C. MITCHELL • *Department of Biochemistry, Microbiology and Immunology, Wayne State University School of Medicine, Detroit, MI, USA*
- ALEXANDRA E. PURDY • *Department of Biology, Amherst College, Amherst, MA, USA*
- STEFAN SCHILD • *Institute of Molecular Biosciences, University of Graz, Graz, Austria; BioTechMed, Graz, Austria*
- LAUREN M. SHULL • *Tufts University School of Medicine, Boston, MA, USA*
- ALEKSANDRA E. SIKORA • *Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR, USA*
- ANISIA J. SILVA • *Department of Microbiology, Biochemistry and Immunology, Morehouse School of Medicine, Atlanta, GA, USA*
- MIKE S. SON • *Department of Biological Sciences, Plymouth State University, Plymouth, NH, USA*
- RICHARD TEHAN • *Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR, USA*

BO R. WEBER • *Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR, USA*

JEFFREY H. WITHEY • *Department of Biochemistry, Microbiology and Immunology, Wayne State University School of Medicine, Detroit, MI, USA*

RYSZARD A. ZIELKE • *Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, OR, USA*

FRANZ G. ZINGL • *Institute of Molecular Biosciences, University of Graz, Graz, Austria*