
Preface

Nine years ago, the chapters for the first edition of *Vaccinia Virus and Poxvirology* were submitted for publication in the *Methods in Molecular Biology Series*. This second edition does not replace the first edition since essentially every chapter in this volume represents a protocol not covered in the first edition. To allow new readers to be aware of what topics were covered in the first edition, I include the following list of chapters from the first edition of *Vaccinia Virus and Poxvirology, Methods and Protocols* (Volume 269 in the *Methods in Molecular Biology Series*):

1. Working Safely with Vaccinia Virus: Laboratory Technique and the Role of Vaccinia Vaccination (Stuart N. Isaacs)
2. Construction and Isolation of Recombinant Vaccinia Virus Using Genetic Markers (María M. Lorenzo, Inmaculada Galindo, and Rafael Blasco)
3. Construction of Recombinant Vaccinia Virus: Cloning into the Thymidine Kinase Locus (Chelsea M. Byrd and Dennis E. Hruby)
4. Transient and Inducible Expression of Vaccinia/T7 Recombinant Viruses (Mohamed R. Mohamed and Edward G. Niles)
5. Construction of Recombinant Vaccinia Viruses Using Leporipoxvirus Catalyzed Recombination and Reactivation of Orthopoxvirus DNA (Xiao-Dan Yao and David H. Evans)
6. Construction of cDNA Libraries in Vaccinia Virus (Ernest S. Smith, Shuying Shi, and Maurice Zauderer)
7. Construction and Isolation of Recombinant MVA (Caroline Staib, Ingo Drexler, and Gerd Sutter)
8. Growing Poxviruses and Determining Virus Titer (Girish J. Kotwal and Melissa Abraham)
9. Rapid Preparation of Vaccinia Virus DNA Template for Analysis and Cloning by PCR (Rachel L. Roper)
10. Orthopoxvirus Diagnostics (Hermann Meyer, Inger K. Damon, and Joseph J. Esposito)
11. An In Vitro Transcription System for Studying Vaccinia Virus Early Genes (Steven S. Broyles and Marcia Kremer)
12. An In Vitro Transcription System for Studying Vaccinia Virus Late Genes (Cynthia F. Wright)
13. Studying Vaccinia Virus RNA Processing In Vitro (Paul D. Gershon)
14. Methods for Analysis of Poxvirus DNA Replication (Paula Traktman and Kathleen Boyle)
15. Studying the Binding and Entry of the Intracellular and Extracellular Enveloped Forms of Vaccinia Virus (Mansun Law and Geoffrey L. Smith)
16. Pox, Dyes, and Videotape; Making Movies of GFP Labeled Vaccinia Virus (Brian M. Ward)

17. Interaction Analysis of Viral Cytokine-Binding Proteins Using Surface Plasmon Resonance (Bruce T. Seet and Grant McFadden)
18. Monitoring of Human Immunological Responses to Vaccinia Virus (Richard Harrop, Matthew Ryan, Hana Golding, Irina Redchenko, and Miles W. Carroll)
19. Vaccinia Virus as a Tool for Immunologic Studies (Nia Tatsis, Gomathinayagam Sinnathamby, and Laurence C. Eisenlohr)
20. Mouse Models for Studying Orthopoxvirus Respiratory Infections (Jill Schriewer, R. Mark L. Buller, and Gelita Owens)
21. Viral Glycoprotein-Mediated Cell Fusion Assays Using Vaccinia Virus Vectors (Katharine N. Bossart and Christopher C. Broder)
22. Use of Dual Recombinant Vaccinia Virus Vectors to Assay Viral Glycoprotein-Mediated Fusion with Transfection-Resistant Primary Cell Targets (Yanjie Yi, Anjali Singh, Joanne Cutilli, and Ronald G. Collman)
23. Poxvirus Bioinformatics (Chris Upton)
24. Preparation and Use of Molluscum Contagiosum Virus (MCV) from Human Tissue Biopsy Specimens (Nadja V. Melquiot and Joachim J. Bugert)

In this second edition of poxvirus protocols, there are multiple new chapters covering various approaches for the construction of recombinant viruses. Other chapters focus on methods to isolate the various forms of infectious virus, methods to study the entry of poxviruses into cells, and various protocols covering in vivo models to study poxvirus pathogenesis. There are also chapters on studying cellular immune responses and generation of monoclonal antibodies to poxvirus proteins. This book also contains chapters to cover methods in poxvirus bioinformatics as well as various ways to study poxvirus immunomodulatory proteins. The protocols are designed to be easy to follow and the Note sections include both additional explanatory information and important insights into the protocols.

Since the last edition of this book, a number of important events related to poxvirology have occurred. Examples include the FDA approval of a culture-based live smallpox vaccine and the vaccination of large numbers of US military and relatively large numbers of US civilians. Novel anti-poxvirus therapeutics have been developed and have been used in emergency settings. I will not even attempt to summarize the scientific advances in poxvirology that have been made over this time period. Since the last edition of this book, there have been a number of retirements of prominent poxvirologists. So I would like to acknowledge the retirements of Joseph J. Esposito (Centers for Disease Control and Prevention, Atlanta), Richard (Dick) W. Moyer (University of Florida, Gainesville), and Edward G. Niles (SUNY School of Medicine, Buffalo). These fine scientists ran outstanding labs, made countless contributions to the poxvirus field, and throughout their careers helped create the community that those of us in poxvirology have enjoyed. While no longer lab-based, we are fortunate that they all remain active and continue to contribute to the scientific community. Since the last edition of this book, the poxvirus community sadly marked the deaths of colleagues. So I would like to acknowledge the passing of Riccardo (Rico) Wittek (April 26, 1944 to September 19, 2008) and Frank J. Fenner (December 21, 1914 to November 22, 2010). Their contributions to our field will not be forgotten.

Philadelphia, PA, USA

Stuart N. Isaacs

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