Contents

Preface ......................................................................................................................... v
Contributors ............................................................................................................... xi

Part I Approaches to the Detection and Analysis of HPV Types

1 Evolution and Classification of Oncogenic Human Papillomavirus Types
   and Variants Associated with Cervical Cancer ................................................... 3
   Zigui Chen, Luciana Bueno de Freitas, and Robert D. Burk

2 A Real-Time PCR Approach Based on SPF10 Primers
   and the INNO-LiPA HPV Genotyping Extra Assay for the Detection
   and Typing of Human Papillomavirus .............................................................. 27
   M. Isabel Micalessi, Gaëlle A. Boulet, and Johannes Bogers

Part II Molecular Pathogenesis of CxCA

3 Replication of Human Papillomavirus in Culture .............................................. 39
   Eric J. Ryndock, Jennifer Biryukov, and Craig Meyers

4 HPV Binding Assay to Laminin-332/Integrin α6β4
   on Human Keratinocytes .................................................................................... 53
   Sarah A. Brendle and Neil D. Christensen

5 Methods to Assess the Nucleocytoplasmic Shuttling of the HPV E1
   Helicase and Its Effects on Cellular Proliferation and Induction
   of a DNA Damage Response ........................................................................... 67
   Michaël Lehoux, Amélie Fradet-Turcotte, and Jacques Archambault

6 Genetic Methods for Studying the Role of Viral Oncogenes
   in the HPV Life Cycle ....................................................................................... 81
   Jason M. Bodily

7 Robust HPV-18 Production in Organotypic Cultures
   of Primary Human Keratinocytes .................................................................... 93
   Hsu-Kun Wang, Thomas R. Broker, and Louise T. Chow

8 A High-Throughput Cellular Assay to Quantify the p53-Degradation
   Activity of E6 from Different Human Papillomavirus Types ......................... 111
   David Gagnon and Jacques Archambault

9 Retroviral Expression of Human Cystatin Genes in HeLa Cells .................... 121
   Crystal M. Diep, Gagandeep Kaur, Daniel Keppler, and Athena W. Lin

Part III Immune Responses to HPV Infections

10 Molecular Analysis of Human Papillomavirus Virus-Like Particle Activated
    Langerhans Cells In Vitro ............................................................................... 135
    Andrew W. Woodham, Adam B. Raff, Diane M. Da Silva,
    and W. Martin Kast
PART IV IDENTIFICATION OF NOVEL POTENTIAL DRUG TARGETS

11 Selective Silencing of Gene Target Expression By siRNA Expression Plasmids in Human Cervical Cancer Cells .................................................. 153
   Oscar Peralta-Zaragoza, Faustino De la O-Gómez, Jessica Deas, Gloria Fernández-Tilapa, Geny del Socorro Fierros-Zárate, Claudia Gómez-Cerón, Ana Burguete-García, Kirvis Torres-Poveda, Victor Hugo Bermúdez-Morales, Mauricio Rodríguez-Dorantes, Carlos Pérez-Plasencia, and Vicente Madrid-Marina

12 Silencing of E6/E7 Expression in Cervical Cancer Stem-Like Cells .......... 173
   Wenyi Gu, Nigel McMillan, and Chengzhong Yu

13 Two-Step Procedure for Evaluating Experimentally Induced DNA Damage: Texas Red and Comet Assays .................................................. 183
   Gina J. Ferris, Lauren B. Shunkwiler, and Charles A. Kunos

14 Measurement of Deubiquitinating Enzyme Activity Via a Suicidal HA-Ub-VS Probe ................................................................. 193
   Colleen Rivard and Martina Bazzaro

PART V APPROACHES TO DETECTING, TYPING, AND STAGING OF CxCA

15 Immunocytochemical Analysis of the Cervical Pap Smear .................. 203
   Terry K. Morgan and Michelle Berlin

16 Diagnosis of HPV-Negative, Gastric-Type Adenocarcinoma of the Endocervix ................................................................. 213
   Edyta C. Pirog

17 Targeting of the HPV-16 E7 Protein by RNA Aptamers .................. 221
   Julia Dolores Toscano-Garibay, María Luisa Benítez-Hess, and Luis Marat Alvarez-Salas

18 The Use of MYBL2 as a Novel Candidate Biomarker of Cervical Cancer .... 241
   Cara M. Martin, Katharine Astbury, Louise Keboe, Jacqueline Barry O’Crowley, Sharon O’Toole, and John J. O’Leary

19 Fixation Methods for the Preservation of Morphology, RNAs, and Proteins in Paraffin-Embedded Human Cervical Cancer Cell Xenografts in Mice .... 253
   Yoko Matsuda and Toshiyuki Ishiwata

PART VI GENOMIC ANALYSES OF CxCA

20 Assessment of the HPV DNA Methylation Status in Cervical Lesions .... 267
   Mina Kalantari and Hans-Ulrich Bernard

21 MeDIP-on-Chip for Methylation Profiling ..................................... 281
   Yaw-Wen Hsu, Rui-Lan Huang, and Hung-Cheng Lai

22 Use of DBD-FISH for the Study of Cervical Cancer Progression ............ 291
   Elva I. Cortés-Gutiérrez, Jose Luis Fernández, Martha I. Dávila-Rodríguez, Carmen López-Fernández, and Jaime Gosálvez
## Part VII Cellular Assays and Cell Culture Models of CxCA

23 A Quantitative and High-Throughput Assay of Human Papillomavirus DNA Replication ........................................... 305  
David Gagnon, Amélie Fradet-Turcotte, and Jacques Archambault

24 Native Human Papillomavirus Production, Quantification, and Infectivity Analysis ........................................... 317  
Jennifer Biryukov, Linda Cruz, Eric J. Ryndock, and Craig Meyers

25 Functional Analysis of HPV-Like Particle-Activated Langerhans Cells In Vitro ........................................... 333  
Lisa Yan, Andrew W. Woodham, Diane M. Da Silva, and W. Martin Kast

26 Assessment of the Radiation Sensitivity of Cervical Cancer Cell Lines .......... 351  
Mayil Vahanan Bose and Thangarajan Rajkumar

## Part VIII Animal Models of CxCA and Experimental Therapeutic Strategies

27 Mouse Model of Cervicovaginal Papillomavirus Infection ................................. 365  
Nicolas Çuburu, Rebecca J. Cerio, Cynthia D. Thompson, and Patricia M. Day

28 Establishment of Orthotopic Primary Cervix Cancer Xenografts ......................... 381  
Naz Chaudary, Karolina Jaluba, Melania Pintilie, and Richard P. Hill

29 Generation of K14-E7/ΔN87βcat Double Transgenic Mice as a Model of Cervical Cancer ........................................... 393  
Gülay Bulut and Aykut Üren

Index ........................................... 407
Cervical Cancer
Methods and Protocols
Keppler, D.; Lin, A.W. (Eds.)
2015, XIV, 413 p. 70 illus., 42 illus. in color., Hardcover
A product of Humana Press