

---

# Contents

<i>Preface</i> . . . . .	<i>v</i>
<i>Contributors</i> . . . . .	<i>xi</i>

## PART I BACKGROUND: EPIGENETIC MECHANISM

1 Cancer Epigenetics: An Introduction . . . . .	3
<i>Rajnee Kanwal, Karishma Gupta, and Sanjay Gupta</i>	
2 Community Resources and Technologies Developed Through the NIH Roadmap Epigenomics Program . . . . .	27
<i>John S. Satterlee, Andrea Beckel-Mitchener, Kim McAllister, Dena C. Procaccini, Joni L. Rutter, Frederick L. Tyson, and Lisa Helbling Chadwick</i>	
3 Epigenome-Wide Association Studies (EWAS): Past, Present, and Future . . . .	51
<i>James M. Flanagan</i>	
4 Epigenetic Biomarkers in Liver Cancer . . . . .	65
<i>Krishna K. Banaudha and Mukesh Verma</i>	

## PART II CANCER SPECIFIC TYPE EPIGENETIC CHANGES

5 Cancer Type-Specific Epigenetic Changes: Gastric Cancer . . . . .	79
<i>Danielle Queiroz Calcagno, Marília de Arruda Cardoso Smith, and Rommel Rodriguez Burbano</i>	
6 Beyond the Island: Epigenetic Biomarkers of Colorectal and Prostate Cancer . . . . .	103
<i>Andrea J. Savio and Bharati Bapat</i>	
7 Prostate Cancer Epigenome . . . . .	125
<i>Swathi Chinaranagari, Pankaj Sharma, Nathan J. Bowen, and Jaideep Chaudhary</i>	
8 CpG Island Hypermethylation as a Biomarker for the Early Detection of Lung Cancer. . . . .	141
<i>Yujin Kim and Duk-Hwan Kim</i>	
9 Analysis of DNA Methylation in Pancreatic Cancer: An Update. . . . .	173
<i>Christian Pilarsky and Robert Grützmann</i>	
10 Epigenetics of Urothelial Carcinoma . . . . .	183
<i>Wolfgang A. Schulz, Evangelia A. Koutsogiannouli, Günter Niegisch, and Michèle J. Hoffmann</i>	

11	Epigenetics of Prostate Cancer . . . . .	217
	<i>Tawnya C. McKee and James V. Tricoli</i>	
12	Methylation Profile Landscape in Mesothelioma: Possible Implications in Early Detection, Disease Progression, and Therapeutic Options. . . . .	235
	<i>Xinbo Zhang, Naimei Tang, Arun K. Rishi, Harvey I. Pass, and Anil Wali</i>	
PART III METHODS AND TECHNOLOGIES USED FOR DETECTING EPIGENETIC CHANGES		
13	Techniques to Access Histone Modifications and Variants in Cancer . . . . .	251
	<i>Monica Tyagi, Shafqat A. Khan, Saikat Bhattacharya, Divya Reddy, Ajit K. Sharma, Bharat Khade, and Sanjay Gupta</i>	
14	Single Base Resolution Analysis of 5-Methylcytosine and 5-Hydroxymethylcytosine by RRBS and TAB-RRBS. . . . .	273
	<i>Maria A. Hahn, Arthur X. Li, Xiwei Wu, and Gerd P. Pfeifer</i>	
15	Quantitative DNA Methylation Analysis for Epigenotyping of Colorectal Cancer . . . . .	289
	<i>Atsushi Kaneda and Koichi Yagi</i>	
16	Histone Modifications Associated with Cancer Cell Migration and Invasion . . . . .	301
	<i>Miki Hieda, Nariaki Matsuura, and Hiroshi Kimura</i>	
PART IV FACTORS THAT INFLUENCE EPIGENETIC CHANGES IN CANCER		
17	Aberrant Epigenetic Modifications in Radiation-Resistant Head and Neck Cancers . . . . .	321
	<i>Hon-Yi Lin, Tim Hui-Ming Huang, and Michael Wing-Yan Chan</i>	
18	Cancer-Associated Infectious Agents and Epigenetic Regulation . . . . .	333
	<i>Vidya Vedham and Mukesh Verma</i>	
19	Toxicoepigenomics and Cancer: Implications for Screening . . . . .	355
	<i>Mukesh Verma</i>	
20	Human Papilloma Virus (HPV) Modulation of the HNSCC Epigenome. . . . .	369
	<i>Josena K. Stephen and Maria J. Worsham</i>	
21	Epigenetic Regulation of HIV, AIDS, and AIDS-Related Malignancies . . . . .	381
	<i>Mukesh Verma</i>	
22	Epigenetics of Colorectal Cancer. . . . .	405
	<i>Wenji Yan and Mingzhou Guo</i>	
23	Epigenetics in Breast and Prostate Cancer . . . . .	425
	<i>Yanyuan Wu, Marianna Sarkissyan, and Jaydutt V. Vadgama</i>	

PART V FUTURE DIRECTIONS: RISK ASSESSMENT,  
DIAGNOSIS, TREATMENT,  
AND PROGNOSIS

24	Epigenetic Inhibitors. . . . .	469
	<i>Mukesh Verma and Hirendra Nath Banerjee</i>	
25	Use of Epigenetic Modulators as a Powerful Adjuvant for Breast Cancer Therapies. . . . .	487
	<i>Aurore Claude-Taupin, Michael Boyer-Guittaut, Régis Delage-Mourroux, and Eric Hervouet</i>	
26	Epigenetic Approaches in Glioblastoma Multiforme and Their Implication in Screening and Diagnosis . . . . .	511
	<i>Gwyneth Hyman, Vinod Manglik, Jeffrey M. Rousch, Mukesh Verma, David Kinkebiel, and Hirendra Nath Banerjee</i>	
27	Detection of Circulatory MicroRNAs in Prostate Cancer. . . . .	523
	<i>Anvesha Srivastava, Helle Goldberger, Zainab Afzal, Simeng Suy, Sean P. Collins, and Deepak Kumar</i>	
28	Identification and Characterization of Small-Molecule Inhibitors of Lysine Acetyltransferases . . . . .	539
	<i>Daqing Liao</i>	
29	Epigenetic Regulation in Biopsychosocial Pathways. . . . .	549
	<i>Kristin Litzelman and Mukesh Verma</i>	
30	Viral Epigenetics. . . . .	569
	<i>Barry I. Milavetz and Lata Balakrishnan</i>	
31	P53 Tumor Suppression Network in Cancer Epigenetics . . . . .	597
	<i>Alok Mishra, Daniel J. Brat, and Mukesh Verma</i>	
32	Promoter Hypermethylation as a Biomarker in Prostate Adenocarcinoma . . . . .	607
	<i>Jong Y. Park</i>	
33	Sequencing the Cancer Methylome . . . . .	627
	<i>Austin Y. Shull, Satish K. Noonepalle, Eun-Joon Lee, Jeong-Hyeon Choi, and Huidong Shi</i>	
34	Global DNA Methylation Profiling Technologies and the Ovarian Cancer Methylome . . . . .	653
	<i>Jessica Tang, Fang Fang, Dave F. Miller, Jay M. Pilrose, Daniela Matei, Tim Hui-Ming Huang, and Kenneth P. Nephew</i>	
35	Recent Progress in the Discovery of Epigenetic Inhibitors for the Treatment of Cancer . . . . .	677
	<i>Sharad K. Verma</i>	
36	At the Crossroad Between Obesity and Gastric Cancer . . . . .	689
	<i>Jone Garai, Robert B. Uddo, Maura C. Mohler, Nicole Pelligrino, Richard Scribner, Melinda S. Sothorn, and Jovanny Zabaleta</i>	

37	Detection of Epigenetic Aberrations in the Development of Hepatocellular Carcinoma. . . . .	709
	<i>Yujing Zhang</i>	
38	Specific Type Epigenetic Changes in Cervical Cancers. . . . .	733
	<i>Shuping Zhao</i>	
39	Epigenetics in Head and Neck Cancer. . . . .	751
	<i>Syeda Marriam Bakhtiar, Amjad Ali, and Debmalya Barh</i>	
40	Epigenetic Therapy for Colorectal Cancer. . . . .	771
	<i>Vivek Vaish, Tripti Khare, Mukesh Verma, and Sharad Khare</i>	
41	Epigenetics of Gastric Cancer . . . . .	783
	<i>Mingzhou Guo and Wenji Yan</i>	
	<i>Index . . . . .</i>	<i>801</i>

Cancer Epigenetics

Risk Assessment, Diagnosis, Treatment, and Prognosis

Verma, M. (Ed.)

2015, XVI, 804 p. 73 illus., 31 illus. in color., Hardcover

ISBN: 978-1-4939-1803-4

A product of Humana Press