## **Contents**

	efacentributors	x	
PA	RT I BACKGROUND: EPIGENETIC MECHANISM		
1	Cancer Epigenetics: An Introduction	3	
2	Community Resources and Technologies Developed Through the NIH Roadmap Epigenomics Program  John S. Satterlee, Andrea Beckel-Mitchener, Kim McAllister,  Dena C. Procaccini, Joni L. Rutter, Frederick L. Tyson,  and Lisa Helbling Chadwick	27	
3	Epigenome-Wide Association Studies (EWAS): Past, Present, and Future James M. Flanagan	51	
4	Epigenetic Biomarkers in Liver Cancer	65	
Pal	RT II CANCER SPECIFIC TYPE EPIGENETIC CHANGES		
5	Cancer Type-Specific Epigenetic Changes: Gastric Cancer  Danielle Queiroz Calcagno, Marília de Arruda Cardoso Smith, and Rommel Rodriguez Burbano		
6			
7			
8	CpG Island Hypermethylation as a Biomarker for the Early Detection of Lung Cancer	141	
9	Analysis of DNA Methylation in Pancreatic Cancer: An Update	173	
10	Epigenetics of Urothelial Carcinoma	183	

11	Epigenetics of Prostate Cancer  Tawnya C. McKee and James V. Tricoli	217
12	Methylation Profile Landscape in Mesothelioma: Possible Implications in Early Detection, Disease Progression, and Therapeutic Options	235
Paf	RT III METHODS AND TECHNOLOGIES USED FOR DETECTING EPIGENETIC CHANGES	
13	Techniques to Access Histone Modifications and Variants in Cancer Monica Tyagi, Shafqat A. Khan, Saikat Bhattacharya, Divya Reddy, Ajit K. Sharma, Bharat Khade, and Sanjay Gupta	251
14	Single Base Resolution Analysis of 5-Methylcytosine and 5-Hydroxymethylcytosine by RRBS and TAB-RRBS	273
15	Quantitative DNA Methylation Analysis for Epigenotyping of Colorectal Cancer	289
16	Histone Modifications Associated with Cancer Cell Migration and Invasion	301
Pa	RT IV FACTORS THAT INFLUENCE EPIGENETIC CHANGES IN CANCER	
17	Aberrant Epigenetic Modifications in Radiation-Resistant Head and Neck Cancers	321
18	Cancer-Associated Infectious Agents and Epigenetic Regulation	333
19	Toxicoepigenomics and Cancer: Implications for Screening	355
20	Human Papilloma Virus (HPV) Modulation of the HNSCC Epigenome  Josena K. Stephen and Maria J. Worsham	369
21	Epigenetic Regulation of HIV, AIDS, and AIDS-Related Malignancies Mukesh Verma	38]
22	Epigenetics of Colorectal Cancer	405
23	_	425

Pai	RT ${f V}$	Future Directions: Risk Assessment, Diagnosis, Treatment, and Prognosis	
24		enetic Inhibitors	469
25	for B Auro	of Epigenetic Modulators as a Powerful Adjuvant reast Cancer Therapies	487
26	and T	enetic Approaches in Glioblastoma Multiforme Their Implication in Screening and Diagnosis neth Hyman, Vinod Manglik, Jeffrey M. Rousch, esh Verma, David Kinkebiel, and Hirendra Nath Banerjee	511
27	Anve	ction of Circulatory MicroRNAs in Prostate Cancersha Srivastava, Helle Goldberger, Zainab Afzal, ng Suy, Sean P. Collins, and Deepak Kumar	523
28	of Ly	rification and Characterization of Small-Molecule Inhibitors rsine Acetyltransferases	539
29		enetic Regulation in Biopsychosocial Pathways	549
30		Epigeneticsy I. Milavetz and Lata Balakrishnan	569
31		Tumor Suppression Network in Cancer Epigenetics	597
32	in Pro	noter Hypermethylation as a Biomarker ostate Adenocarcinoma	607
33	Austi	encing the Cancer Methylome	627
34	and the Jessica	al DNA Methylation Profiling Technologies he Ovarian Cancer Methylome	653
35	for th	nt Progress in the Discovery of Epigenetic Inhibitors ne Treatment of Cancer	677
36	Jone	e Crossroad Between Obesity and Gastric Cancer	689

## Contents

37	Detection of Epigenetic Aberrations in the Development of Hepatocellular Carcinoma	709
	Yujing Zhang	=0.0
38	Specific Type Epigenetic Changes in Cervical Cancers	733
39	Epigenetics in Head and Neck Cancer	<i>7</i> 51
40	Epigenetic Therapy for Colorectal Cancer	<i>77</i> 1
41	Epigenetics of Gastric Cancer	783
Ina	lex	80