

CONTENTS

1.	The Normal Prostate Gland	1
	Anatomy	1
	Anatomic Models	2
	“Capsule”	4
	Blood Supply.....	6
	Lymphatic Drainage	7
	Nerves	7
	Embryology and Developmental Anatomy.....	9
	Histology.....	10
	Immunohistochemistry.....	16
	Ultrastructure.....	17
	Prostate Function.....	18
2.	Benign Prostatic Hyperplasia	23
	Prevalence	23
	Clinical Features	24
	Gross Findings	25
	Microscopic Findings.....	28
	Immunohistochemical Findings	41
	Molecular Genetic Findings	42
	Differential Diagnosis	42
	Clinical Behavior and Treatment	44
3.	Prostatic Intraepithelial Neoplasia	49
	Histology.....	49
	Relationship of PIN to Carcinoma	50
	Differential Diagnosis	60
	Immunohistochemistry.....	68
	Low-Grade PIN on Biopsy: Risk of Cancer on Rebiopsy	68
	High-Grade PIN on Biopsy: Incidence and Risk of Cancer on Rebiopsy	68
	High-Grade PIN on TURP	70
	Intraductal Carcinoma of the Prostate.....	70
4.	Acinar (Usual) Adenocarcinoma of the Prostate	77
	Epidemiology.....	77
	Clinical Incidence.....	77
	Mortality	79
	Prevalence at Autopsy	79
	Clinical Risk Factors	80

Prevention	82
Clinical Features	82
Clinical Manifestations	82
Digital Rectal Examination	83
Serum Prostate-Specific Antigen.....	83
Clinical Staging.....	84
Pathologic Findings	87
Gross Findings	87
Location.....	88
Multifocality.....	93
Microscopic Findings.....	93
The Gleason Grading System	136
Gleason Patterns.....	137
Grading Variants of Prostate Carcinoma.....	154
Reporting Secondary Patterns of Lower Grade when Present to a Limited Extent.....	158
Reporting Secondary Patterns of Higher Grade when Present to a Limited Extent	158
Tertiary Gleason Patterns	158
Percent of Pattern 4 or 5.....	159
Needle Biopsy with Different Cores Showing Different Grades	159
Radical Prostatectomy Specimens with Different Nodules Showing Different Grades.....	160
Prognosis of Patients with Various Gleason Patterns.....	160
Correlation of Grade with Serum PSA Levels.....	160
Correlation of Grade between Biopsy and Radical Prostatectomy Specimen	160
Change of Grade Over Time.....	161
Interobserver Reproducibility.....	161
Treatment.....	161
Active Surveillance	162
Surgery.....	162
Radiation Therapy	163
Hormone Therapy	165
Chemotherapy.....	165
Pathologic Staging, Spread, Metastases, and Prognosis	166
pT2: Carcinoma Confined within the Prostate Gland.....	166
pT2+	166
pT3	167
pT4: Invasion of Rectum or Gross Invasion of Urinary Bladder Neck.....	178
Perineural Invasion.....	179

Vascular Invasion.....	183
Primary Tumor Size	184
pN: Lymph Node Metastasis	185
Distant Metastasis.....	189
Distant Nonbony Prostatic Carcinoma Metastasis	190
Effects of Treatment on Malignant Prostate Tissue.....	195
Hormonal Therapy	195
Radiation Therapy	199
Cryotherapy.....	204
Phytotherapy	204
Chemotherapy.....	206
Special Studies.....	206
Histochemistry	206
Immunohistochemistry.....	206
Treated Prostatic Adenocarcinoma.....	208
Prostatic Carcinoma Versus Granulomatous Prostatitis.....	209
High-Grade Prostatic Carcinoma Versus High-Grade Urothelial Carcinoma.....	209
Prostatic Adenocarcinoma Versus Secondary Adenocarcinoma	209
Poorly Differentiated Prostatic Adenocarcinoma Versus Prostatic Small Cell Carcinoma	212
Poorly Differentiated Prostatic Adenocarcinoma Versus Lymphoma and Leukemia	212
Metastatic Prostatic Adenocarcinoma	212
Immunohistochemistry for Predictive Markers for Targeted Therapy	213
Molecular Genetics.....	213
5. Variants of Prostatic Adenocarcinoma	239
Prostatic Duct Adenocarcinoma	239
Mucinous (Colloid) and Signet Ring Cell Adenocarcinoma	249
Carcinomas with Squamous Differentiation.....	252
Tumors with Neuroendocrine Differentiation	253
Sarcomatoid Carcinoma	262
Pleomorphic Giant Cell Adenocarcinoma	263
Miscellaneous Tumors	265
6. Basal Cell Tumors and Tumor-Like Conditions	269
Basal Cell Hyperplasia	269
Basal Cell Carcinoma.....	279
7. Urothelial Tumors and Tumor-Like Lesions	289
Primary Urothelial Lesions.....	289
Urothelial Metaplasia	289

Primary Urothelial Carcinoma	291
Secondary Urothelial Lesions	291
In Situ (Intraductal) Spread of Carcinoma	291
Invasive Urothelial Carcinoma	292
Grading and Staging of Urothelial Carcinoma of the Prostate	297
8. Miscellaneous Epithelial Tumors of the Prostate	299
Benign Epithelial Tumors	299
Cystadenoma	299
Oncocytoma	301
Malignant Epithelial Tumors	301
Clear Cell Carcinoma of the Utricle/Prostate	301
9. Mesenchymal Tumors of the Prostate	305
Benign Mesenchymal Tumors	305
Leiomyoma	305
Miscellaneous Benign Mesenchymal Tumors	305
Malignant Mesenchymal Tumors	307
Leiomyosarcoma	307
Rhabdomyosarcoma	309
Miscellaneous Malignant Mesenchymal Tumors	314
Mesenchymal Tumors of Uncertain Malignant Potential	314
Solitary Fibrous Tumor	314
Inflammatory Myofibroblastic Tumor	318
Secondary Involvement by Mesenchymal Tumors	321
Gastrointestinal Stromal Tumor	321
Stromal Tumors Arising from Specialized Prostatic Stroma	323
Stromal Tumors of Uncertain Malignant Potential	323
Stromal Sarcoma	329
10. Hematolymphoid Tumors and Tumor-Like Lesions	335
Lymphoma	335
Leukemia	340
Plasma Cell Myeloma	342
Extramedullary Hematopoiesis	343
Signet Ring Lymphocytes	343
11. Miscellaneous Tumors	347
Extragenital Germ Cell Tumors	347
Ganglioneuroma	347
Lymphangioliomatosis	347
Malignant Rhabdoid Tumor	347
Malignant Mixed Tumor of Salivary Gland Type	347

Malignant Perivascular Epithelioid Cell Tumor	348
Malignant Melanoma	348
Ectomesenchymoma	348
Malignant Mesenchymoma.....	349
Paraganglioma	349
Primitive Neuroectodermal Tumor.....	350
Wilms Tumor	351
Rare Secondary Tumors	351
12. Tumor-Like Lesions of the Prostate	357
Adenosis.....	357
Atrophy	367
Basal Cell Hyperplasia	374
Clear Cell Cribriform Hyperplasia (Cribriform Hyperplasia).....	374
Malakoplakia.....	374
Mesonephric Hyperplasia	374
Nephrogenic Adenoma.....	377
Nonspecific Granulomatous Prostatitis.....	380
Prostatic Urethral Polyps	382
Sclerosing Adenosis	383
Squamous Metaplasia adjacent to Infarcts.....	386
Verumontanum Mucosal Gland Hyperplasia.....	387
Xanthoma.....	388
13. Normal Nonprostatic Tissue in Prostate Specimens.....	393
Seminal Vesicles.....	393
Colonic Mucosa	393
Cowper Glands	393
Paraganglia.....	402
Signet Ring Lymphocytes	402
14. Tumors of the Penis	405
Anatomy and Histology	405
Distal (Anterior) Penis	405
Proximal Penis (Peneal Body, or Shaft)	410
Posterior (Root) Penis	411
Penile Urethra.....	412
Lymphatic Vessels and Inguinal Lymph Nodes	413
Vascular Supply and Innervation.....	413
Classification of Penile Tumors	414
Histologic Classification of Penile Tumors.....	415
Benign Epithelial Tumors	416

Condyloma Acuminatum.....	416
Penile Horn and Micaceous Balanitis.....	418
Adnexal Tumors.....	419
Epithelial Abnormalities and Precancerous Lesions	419
Squamous Hyperplasia	419
Bowenoid Papulosis.....	422
Flat “Acetowhite” Penile Lesions	423
Penile Intraepithelial Neoplasia	423
Differentiated Penile Intraepithelial Neoplasia.....	425
Penile Intraepithelial Neoplasia with Warty and/or Basaloid Features	427
Mixed or Coexisting Penile Intraepithelial Neoplasia	436
Squamous Cell Carcinoma: General Features	436
Epidemiology.....	436
Pathologic Features.....	444
Site of Origin	445
Secondary Tumors Associated with Penile Cancer.....	445
Molecular Pathology	447
Patterns of Growth	449
Histologic Subtypes of Squamous Cell Carcinoma	451
Histologic Classification	451
Squamous Cell Carcinoma, Usual Type	452
Basaloid Carcinoma.....	460
Verrucous Carcinoma	467
Warty (Condylomatous) Carcinoma.....	475
Papillary Carcinoma, Not Otherwise Specified.....	478
Sarcomatoid Carcinoma	486
Pseudoglandular Carcinoma	495
Pseudohyperplastic Carcinoma.....	497
Carcinoma Cuniculatum.....	500
Adenosquamous Carcinoma	502
Mixed Carcinomas.....	506
Unclassified Carcinomas	511
Squamous Cell Carcinoma: Prognostic Factors.....	511
Histologic Grade	516
Perineural Invasion.....	520
Vascular Invasion.....	522
Depth of Invasion or Tumor Thickness	522
Anatomic Levels of Invasion	524
Anatomic Location	525

Patterns of Growth	526
Front of Invasion	526
Size of Primary Tumor	526
Histologic Subtypes	527
Koilocytosis.....	527
Positive Resection Margins.....	527
Urethral Invasion	529
Risk Group Stratification Systems	530
Algorithms and Nomograms.....	531
Limitations in the Pathologic Evaluation of Prognostic Factors	533
The Prognostic Index.....	533
Routes of Cancer Spread.....	536
Local Spread.....	536
Regional Spread	537
Recurrent Carcinomas	538
Disseminated Cancer.....	540
Squamous Cell Carcinoma: Diagnostic Procedures, Staging, and Treatment.....	541
Noninvasive and Minimally Invasive Diagnostic Procedures	541
Staging of Penile Carcinoma	543
Treatment of Penile Carcinoma	544
Standard Surgical Treatment	544
Penile-Preserving Therapy.....	545
Radiotherapy	546
Laser Ablation.....	546
Chemotherapy.....	546
Multimodality Therapy	546
Other Epithelial Tumors	546
Giant Condyloma (Tumor of Buschke-Löwenstein)	546
Clear Cell Carcinoma	549
Paget Disease.....	551
Malignant Melanoma.....	552
Miscellaneous Other Rare Epithelial Tumors	554
Nonepithelial Tumors.....	554
Mesenchymal Tumors	554
Benign Mesenchymal Tumors.....	554
Malignant Mesenchymal Tumors.....	556
Malignant Lymphoma and Related Lesions.....	560
Tumors Metastatic to Penis.....	560
Tumor-Like Lesions.....	561

Cysts	562
Verruciform Xanthoma	566
Peyronie Disease	568
Papillomatosis of Glans Corona.....	569
Lipogranuloma	570
Lichen Sclerosus	571
Melanosis (Lentiginosis).....	573
Os Penis	574
Frozen Section Evaluation of Penile Cancer	575
Circumcision Specimen.....	575
Parital Penectomy Specimen	575
Total Penectomy Specimen	575
Lymph Nodes	575
Guidelines for Handling the Resected Specimen	575
Foreskin	575
Foreskin, Coronal Sulcus, and Glans.....	576
Urethral Margin.....	576
Shaft Margin	576
Glans.....	576
Reporting of Resected Specimens of Penile Carcinoma	577
15. Tumors of the Scrotum	613
Anatomy and Histology	613
Anatomic Layers	613
Blood Supply.....	614
Lymphatic Vessels.....	614
Nerve Supply	614
Benign Epithelial Tumors	614
Condyloma Acuminatum.....	614
Adnexal Tumors.....	615
Malignant Epithelial Tumors.....	616
Squamous Cell Carcinoma	616
Extramammary Paget Disease	627
Basal Cell Carcinoma.....	628
Malignant Melanoma	631
Merkel Cell Carcinoma and Other Neuroendocrine Tumors	631
Miscellaneous Skin Adnexal Tumors.....	633
Benign Mesenchymal Tumors	633
Angiokeratoma	633
Hemangioma	634

Lymphangioma	635
Leiomyoma.....	635
Angiomyxoid Tumors.....	636
Angiomyofibrolastoma.....	639
Cellular Angiofibroma	639
Other Benign Mesenchymal Tumors	640
Malignant Mesenchymal Tumors.....	640
Leiomyosarcoma.....	640
Liposarcoma.....	641
Malignant Fibrous Histiocytoma.....	641
Malignant Lymphoma.....	641
Secondary Tumors	641
Tumor-Like Lesions.....	641
Verruciform Xanthoma	641
Porokeratosis of Mibelli.....	645
“Idiopathic” Scrotal Calcinosis and Epidermoid Cysts.....	646
Sclerosing Lipogranuloma (“Paraffinoma”)	650
Post-Traumatic Spindle Cell Nodule	651
Scrotal Hamartoma including Accessory Scrotum	652
Fibrous Hamartoma of Infancy	652
Smooth Muscle Hamartoma of Dartos.....	652
Isolated Exophytic Elastoma	654
Scrotal Fat Necrosis.....	654
Acute Idiopathic Scrotal Edema	654
Polymorphic Reticulosis of Genital Skin.....	655
Index	665