

CONTENTS

1. Embryology, Anatomy, and Histology of the Uterine Corpus.	1
Embryology	1
Anatomy.	2
Histology	3
Endometrial Cytology	13
2. Non-Neoplastic Lesions	19
Endometrial Metaplasias	19
Endometrial Epithelial Metaplasias	19
Tubal (Ciliated) Metaplasia	19
Mucinous Metaplasia	21
Papillary (Lehman and Hart) Proliferations.	24
Squamous Metaplasia.	28
Papillary Syncytial Metaplasia	30
Eosinophilic Metaplasia	32
Hobnail and Clear Changes.	33
Arias-Stella Reaction.	33
Other Pregnancy/Hormonally Related Alterations	33
Endometrial Stromal Metaplasias.	37
Smooth Muscle Metaplasia	37
Osseous Metaplasia	37
Cartilaginous and Fatty Metaplasia	38
Glial Tissue	38
Other Stromal Metaplasias.	39
Inflammatory/Infectious Processes	40
Chronic Endometritis	40
Necrotizing Endometritis.	43
Lymphoma-Like Lesions	43
Thermal Ablation.	43
Chemotherapy and Radiation-Induced Changes	45
Viral Infections.	46
Intrauterine Device (IUD)-Related Changes	46
Other Inflammatory Processes.	46
Atypical Stromal Cells	49
Myxoid Change in the Endometrium/Myometrium.	50
Adenomyosis	52
Blue Nevus	54
Other Processes.	54

3.	Endometrial Polyp	63
	Clinical Features	63
	Pathogenesis	63
	Gross Findings	63
	Microscopic Findings	64
	Differential Diagnosis	68
4.	Endometrial Precancerous Neoplasia	75
	Epidemiology	75
	Clinical Features	76
	Gross Findings	76
	Molecular Genetic Findings	76
	Diagnostic Criteria	77
	Differential Diagnosis	82
5.	Endometrioid Carcinoma and Related Carcinomas	89
	General Features and Epidemiology	89
	Clinical Features	91
	Gross Findings	91
	Microscopic Findings	91
	Architectural Features	91
	Cellular Features	93
	Stromal Features	99
	Treatment-Related Changes	101
	Grading	103
	Cytology of Endometrial Neoplasia	108
	Related Carcinomas	111
	Mucinous Carcinoma	111
	Ciliated Carcinoma	111
	Secretory Carcinoma	111
	Villoglandular Carcinoma	111
	Endometrioid Carcinoma Admixed with Other Elements	112
	Undifferentiated and Dedifferentiated Carcinoma	112
	Staging	119
	Myometrial Invasion	119
	Lymphovascular Invasion	124
	Cervical Involvement	125
	Synchronous Endometrioid Endometrial and Ovarian Carcinomas	128
	Lymph Node Metastases	129
	Immunohistochemical Findings	131
	Molecular Genetic Findings	133
	Differential Diagnosis	137
	Treatment and Prognosis	149

6.	Serous Carcinoma	165
	General Features	165
	Clinical Features	165
	Gross Findings	166
	Microscopic Findings	166
	Precursors	173
	Immunohistochemical and Molecular Genetic Findings	174
	Differential Diagnosis	174
	Treatment and Prognosis	179
7.	Clear Cell Carcinoma	187
	Definition	187
	General Features	187
	Clinical Features	187
	Gross Findings	187
	Microscopic Findings	188
	Architectural Findings	188
	Cytologic Findings	191
	Stromal Features	192
	Anaplastic or “Undifferentiated” Clear Cell Carcinoma	192
	Precursors	195
	Immunohistochemical Findings	195
	Molecular Genetic Findings	196
	Differential Diagnosis	197
	Treatment and Prognosis	202
8.	Familial Cancer Syndromes	209
	Lynch Syndrome	209
	Definition	209
	General Features	209
	Pathophysiology and Genetics	209
	Screening and Diagnosis	210
	Gross Findings	212
	Microscopic Findings	212
	Immunohistochemical Findings	216
	Comprehensive Screening System	220
	Treatment and Prognosis	220
	Lynch-Like Syndrome	222
	Definition	222
	General Features and Epidemiology	222
	Pathophysiology and Genetics	222
	<i>POLE</i> and <i>POLD1</i> Germline Mutations	223
	Cowden Syndrome	223

Hereditary Breast and Ovarian Cancer Syndromes (<i>BRCA</i> Syndromes)	224
Rare and Controversial Drivers of Endometrial Carcinoma	224
9. Endometrial Stromal Tumors	229
Endometrial Stromal Nodule and Endometrial Stromal Sarcoma	229
Definition	229
Clinical Features	229
Gross Findings	229
Microscopic Findings	231
Immunohistochemical Findings	244
Molecular Genetic Findings	247
Differential Diagnosis	250
Treatment and Prognosis	256
High-Grade Endometrial Stromal Sarcomas	258
Definition	258
<i>YWHAE-FAM22 (YWHAE-NUTM2)</i> High-Grade Endometrial Stromal Sarcoma	258
Clinical Features	258
Gross Findings	258
Microscopic Findings	258
Immunohistochemical and Molecular Genetic Findings	258
Differential Diagnosis	259
Treatment and Prognosis	262
<i>ZC3H7B-BCOR</i> High-Grade Endometrial Stromal Sarcoma	262
Clinical Features	262
Gross Findings	262
Microscopic Findings	263
Immunohistochemical and Molecular Genetic Findings	263
Differential Diagnosis	265
Treatment and Prognosis	267
High-Grade Endometrial Stromal Sarcoma in a Background of Low-Grade Endometrial Stromal Sarcoma	267
Undifferentiated Uterine Sarcoma	268
Definition	268
Clinical Features	268
Gross Findings	268
Microscopic Findings	269
Immunohistochemical and Molecular Genetic Findings	269
Differential Diagnosis	269
Treatment and Prognosis	270
Uterine Tumors Resembling Ovarian Sex Cord Tumors	270
Definition	270
Clinical Features	270

Gross Findings	270
Microscopic Findings	270
Immunohistochemical Findings	271
Ultrastructural Findings.	274
Molecular Genetic Findings.	274
Differential Diagnosis.	276
Treatment and Prognosis	276
10. Smooth Muscle and Other Mesenchymal Tumors.	289
Leiomyoma and Variants	289
Definition	289
Epidemiology and General Features	289
Clinical Features	290
Gross Findings	291
Microscopic Findings	295
Leiomyoma with Bizarre Nuclei (“Symplastic” Leiomyoma)	297
Fumarate Hydratase-Deficient	300
Cellular Leiomyoma.	301
Mitotically Active Leiomyoma.	302
Leiomyoma with Hydropic (Including Diffuse and Perinodular) Change	304
“Dissecting” Leiomyoma Including Cotyledonoid Leiomyoma.	304
Hemorrhagic Cellular “Apoplectic”) Leiomyoma	306
Drug-Related Changes in Leiomyoma.	308
Epithelioid Leiomyoma	309
Myxoid Leiomyoma.	310
Leiomyoma with Heterologous Elements	310
Diffuse Leiomyomatosis.	311
Parasitic Leiomyoma	311
Diffuse Peritoneal Leiomyomatosis.	312
Leiomyoma with Vascular Invasion	312
Intravenous Leiomyomatosis.	313
Benign Metastasizing Leiomyoma	315
Immunohistochemical Findings	315
Molecular Genetic Findings.	317
Differential Diagnosis.	319
Treatment and Prognosis	323
Leiomyosarcoma.	324
Definition	324
Epidemiology and General Features	324
Clinical Features.	325
Gross Findings	325
Microscopic Findings	326

Tumors of the Uterine Corpus and Gestational Trophoblastic Diseases

Spindle	326
Epithelioid	330
Myxoid	331
Dedifferentiated	333
Other	333
Immunohistochemical Findings	333
Molecular Genetic Findings	334
Differential Diagnosis	335
Treatment and Prognosis	337
Smooth Muscle Tumors of Uncertain Malignant Potential (Atypical Leiomyoma) . . .	339
Other Mesenchymal Tumors	340
PEComa	340
Definition	340
Epidemiology and General Features	341
Gross Findings	341
Microscopic Findings	341
Immunohistochemical Findings	345
Differential Diagnosis	346
Treatment and Prognosis	347
Rhabdomyosarcoma	348
Definition	348
Clinical Features	348
Gross Findings	348
Microscopic Findings	348
Immunohistochemical and Molecular Genetic Findings	348
Differential Diagnosis	349
Treatment and Prognosis	351
Inflammatory Myofibroblastic Tumor	351
Definition and General Features	351
Clinical Features	351
Gross Findings	351
Microscopic Findings	351
Immunohistochemical Findings	352
Molecular Genetic Findings	352
Ultrastructural Findings	354
Differential Diagnosis	354
Treatment and Prognosis	355
Vascular Tumors	356
Alveolar Soft Part Sarcoma	356
Lipoma and Liposarcoma	358

Solitary Fibrous Tumor	358
Other Mesenchymal Tumors	359
11. Mixed Epithelial-Stromal Tumors	383
Carcinosarcoma	383
Definition	383
General Features	383
Clinical Features	383
Gross Findings	383
Microscopic Findings	383
Pathogenesis	389
Immunohistochemical Findings	389
Molecular Genetic Findings	390
Differential Diagnosis	391
Treatment and Prognosis	393
Low-Grade Müllerian Adenosarcoma	394
Definition	394
General Features	394
Clinical Features	394
Gross Findings	394
Microscopic Findings	395
Immunohistochemical Findings	403
Molecular Genetic Findings	405
Differential Diagnosis	405
Treatment and Prognosis	407
Müllerian Adenofibroma	408
Adenomyoma	408
Definition	408
Clinical Features	408
Gross Findings	409
Microscopic Findings	409
Differential Diagnosis	409
Treatment and Prognosis	411
Atypical Polypoid Adenomyoma	411
Definition	411
Clinical Features	411
Gross Findings	411
Microscopic Findings	411
Immunohistochemical and Molecular Genetic Findings	413
Differential Diagnosis	414
Treatment and Prognosis	414

12. Miscellaneous and Metastatic Malignancies	421
Neuroendocrine Carcinomas	421
Squamous Cell Carcinoma	423
Mesonephric-Like Carcinoma	424
Primitive Neuroectodermal Tumors	426
Wilms Tumor	428
Pure Germ Cell Tumors and Carcinomas with Germ Cell-Like Differentiation	429
Yolk Sac Tumors	429
Hepatoid Tumors	431
Uterine Teratomas	431
Nongestational Tumors with Trophoblastic Differentiation	431
Sex Cord-Stromal Tumors	433
Metastases and Direct Extension to Uterine Corpus from Adjacent Gynecologic Organs	433
Primary Adnexal/Peritoneal Carcinomas	435
Primary Cervical Carcinomas	435
Metastases from Extragynecologic Sites	437
Hematolymphoid Malignancies	438
13. Gestational Trophoblastic Diseases	445
Normal Trophoblastic Development	446
Trophoblast Stem Cells and Early Development	450
Gestational Trophoblastic Diseases	452
Staging	452
Epidemiology	452
Genetics	453
Imprinting	454
Familial Recurrent (Biparental) Hydatidiform Moles	455
Genetic Testing of Hydatidiform Moles	455
Genetic Features Influencing Outcome	456
Genetic Testing of Gestational Trophoblastic Tumors	456
Human Chorionic Gonadotrophin as a Biomarker of Gestational Trophoblastic Disease	457
Gestational Trophoblastic Disease Subtypes	457
Hydatidiform Moles	458
Complete Hydatidiform Mole	459
Partial Hydatidiform Mole	464
Invasive Hydatidiform Mole	469
Metastatic Molar Disease	470
Ectopic Hydatidiform Mole	470
Twin Pregnancy with Hydatidiform Mole	470
Immunohistochemical Findings	471

Differential Diagnosis	472
Treatment and Prognosis	475
Gestational Trophoblastic Tumors	476
Choriocarcinoma	476
Definition	476
Clinical Features	476
Gross Findings	477
Microscopic Findings	477
Immunohistochemical and Molecular Genetic Findings	480
Intermediate Trophoblastic Lesions	481
Placental Site Trophoblastic Tumor	481
Clinical Features	482
Gross Findings	482
Microscopic Findings	482
Immunohistochemical and Molecular Genetic Findings	483
Treatment and Prognosis	484
Epithelioid Trophoblastic Tumor	485
Clinical Features	485
Gross Findings	485
Microscopic Findings	485
Immunohistochemical Findings	488
Molecular Genetic Findings	488
Treatment and Prognosis	488
Curettage Specimens of Trophoblastic Tissue	489
Exaggerated Placental Site Reaction	489
Placental-Site Nodule/Atypical Placental Site Nodule	489
Mixed Gestational Trophoblastic Tumors	490
Nongestational Tumors with Trophoblastic Phenotype	492
Index	507