

# Contents

Preface, xiii

## Part I Overview of the Diagnostic Process, 1

- 1 Overview of Diagnosis, Categorization, Grading, and Staging, 3
  - Identification of the process, 3
  - Identification of tumor types, 6
  - Grading, 6
  - Staging, 9
  - Staging versus clinical behavior, 10
  - Tumor classification by cell type: epithelial, mesenchymal, round cell and melanoma, 13
    - Epithelial tumors, 13
    - Mesenchymal tumors, 29
    - Round cell tumors, 37
    - Melanoma, 48
  - Conclusion, 51
  - References, 52

## Part II Case Studies, 57

- 2 Selected Lesions of the Head and Neck, 59
  - Bone tumors of the head, 59
    - Osteoma, 59
    - Osteosarcoma, 59
  - Mass lesions of the ear canal, 62
    - Aural polyp, 62
    - Ceruminous adenoma, 63
    - Ceruminous carcinoma, 64
  - Mass lesions of the external ear pinna, 65
    - Histiocytoma, 65
    - Squamous cell carcinoma, 66
  - Mass lesions of the conjunctiva and nictitans, 67
    - Papilloma, 67
    - Squamous cell carcinoma, 68
    - Hemangiosarcoma, 70
    - Melanoma, 71
  - Eyelid masses, 72
    - Meibomian gland adenoma, 72
    - Spindle cell tumor, 72
  - Lesions of the oral and nasal mucosal epithelium, 74
    - Eosinophilic inflammation, 74
    - Lymphoplasmacellular inflammation, 76
    - Lymphoma, 77

- Epulis, 78
  - Acanthomatous epulis, 78
  - Ossifying epulis, 79
  - Viral papilloma, 80
  - Squamous cell carcinoma, 81
  - Melanoma, 82
- Nasal cavity tumors, 83
  - Adenocarcinoma, 84
  - Chondrosarcoma, 85
- Mass lesions of the canine and feline muzzle skin, 86
  - Sebaceous gland nodular hyperplasia, 86
  - Sebaceous gland adenoma, 87
  - Sebaceous epithelioma, 87
  - Trichoblastoma (Basal cell tumor), 88
  - Mast cell tumor, 90
  - Plasma cell tumor, 91
- Mass lesions of the submandibular region, 92
  - Reactive lymph node, 93
  - Malignant lymphoma, 94
  - Normal salivary gland, 95
  - Salivary mucocele, 95
  - Salivary gland carcinoma, 96
- Ventral neck masses, 97
  - Thyroid adenoma, 98
  - Thyroid carcinoma, 99
  - Parathyroid adenoma, 100
- Additional reading, 101
- Bone tumors of the head, 101
- Mass lesions of the ear canal, 101
  - Ceruminous gland carcinoma, 101
- Mass lesions of the external ear pinna, 101
  - Histiocytoma, 101
  - Squamous cell carcinoma, 101
- Mass lesions of the conjunctiva and nictitans, 101
- Eyelid masses, 102
  - Meibomian gland adenoma, 102
  - Spindle cell tumor, 102
- Lesions of the oral and nasal mucosal epithelium, 102
  - Eosinophilic inflammation, 102
  - Lymphoplasmacellular inflammation, 102
  - Acanthomatous epulis, 102
  - Viral papilloma, 102
  - Squamous cell carcinoma, 102
  - Melanoma, 102
- Nasal cavity tumors, 102
  - Adenocarcinoma, 103
  - Chondrosarcoma, 103
- Mass lesions of the canine and feline muzzle skin, 103
  - Sebaceous gland nodular hyperplasia, 103
  - Sebaceous gland adenoma, 103
  - Sebaceous epithelioma, 103
  - Trichoblastoma (Basal cell tumor), 103
  - Mast cell tumor, 103
  - Plasma cell tumor, 103

- Mass lesions of the submandibular region, 103
  - Reactive lymph node, 103
  - Malignant lymphoma, 103
  - Normal salivary gland, 104
  - Salivary mucocele, 104
  - Salivary gland carcinoma, 104
- Ventral neck masses, 104
  - Thyroid carcinoma, 104
- 3 Selected Lesions of the Limbs, Paws, and Digits, 105**
  - Bone lesions, 105
    - Periosteal hyperplasia, 105
    - Osteosarcoma, 105
  - Subungual tumors, 108
    - Melanoma, 108
    - Squamous cell carcinoma, 110
  - Digital skin and nail bed lesions, 111
    - Calcinosis circumscripta, 111
    - Plasmacellular pododermatitis, 112
    - Papilloma, 112
    - Fibroadnexal hyperplasia, 114
  - Stromal tumors of the limb, 116
    - Canine low-grade spindle cell tumor, 116
    - Feline spindle cell tumor, 118
    - Lipoma, 119
    - Liposarcoma, 121
    - Synovial sarcoma, 122
  - Additional reading, 123
  - Bone lesions, 123
  - Subungual tumors, 123
    - Melanoma, 123
    - Squamous cell carcinoma, 124
  - Digital skin and nail bed lesions, 124
    - Calcinosis circumscripta, 124
    - Plasmacellular pododermatitis, 124
    - Papilloma, 124
    - Fibroadnexal hyperplasia, 124
  - Stromal tumors of the limb, 124
- 4 Selected Genital and Perineal Masses, 127**
  - Perineal masses, 127
    - Rectal polyp, 127
    - Perianal gland adenoma, 127
    - Perianal gland carcinoma, 129
    - Anal sac apocrine gland carcinoma, 130
  - Masses of the external genitalia, 132
    - Transmissible venereal tumor, 132
    - Mast cell tumor, 133
  - Additional reading, 134
    - Perineal masses, 134
    - Rectal polyp, 134
    - Perianal gland adenoma, 134
    - Perianal gland carcinoma, 134
    - Anal sac apocrine gland carcinoma, 135

- Masses of the external genitalia, 135
  - Transmissible venereal tumor, 135
  - Mast cell tumor, 135

**5 Selected Lesions of the Skin and Subcutis of the Trunk, 137**

- Mass lesions of the dorsal trunk, 137
  - Calcinosis cutis, 137
  - Follicular cyst, 137
  - Cystic adnexal tumors–trichoepithelioma, keratoacanthoma, 138
  - Apocrine adenoma, 141
  - Apocrine and sebaceous carcinoma, 141
  - Sebaceous carcinoma, 143
  - Lipoma, 143
  - Canine well-differentiated spindle cell proliferation, 144
  - Canine spindle cell tumor, middle grade, 146
  - Canine spindle cell tumor, high grade, 146
  - Feline spindle cell tumor, 149
  - Canine cutaneous lymphoma, 151
  - Mast cell tumor, 153
  - Canine histiocytoma, 154
  - Histiocytosis, 155
- Dorsal tail head masses, 157
  - Pilomatricoma, 157
  - Melanoma, 158
  - Sebaceous adenoma, 160
  - Perianal gland adenoma, 161
- Ventral trunk vascular lesions of the skin and subcutis, 161
  - Hemangioma, 162
  - Hemangiosarcoma, 162
- Mass lesions of the mammary gland, 164
  - Fibroepithelial hyperplasia, 164
  - Mammary gland adenoma, 165
  - Complex adenoma, 165
  - Mixed mammary tumor, 167
  - Mammary carcinoma, 167
- Additional reading, 171
- Mass lesions of the dorsal trunk, 171
  - Calcinosis cutis, 171
  - Follicular cyst, 171
  - Cystic adnexal tumors–trichoepithelioma, keratoacanthoma, 171
  - Apocrine adenoma, 171
  - Apocrine and sebaceous carcinoma, 171
  - Lipoma, 171
  - Canine well-differentiated spindle cell proliferation, 171
  - Canine spindle cell tumor, mid grade, 171
  - Canine spindle cell tumor, high grade, 171
  - Feline spindle cell tumor, 171
  - Canine cutaneous lymphoma, 172
  - Mast cell tumor, 172
  - Canine histiocytoma, 172
  - Histiocytosis, 172
- Dorsal tail head masses, 172
  - Pilomatricoma, 172
  - Melanoma, 172

- Sebaceous adenoma, 172
- Perianal gland adenoma, 172
- Ventral trunk vascular lesions of the skin and subcutis, 173
  - Hemangioma, 173
  - Hemangiosarcoma, 173
- Mass lesions of the mammary gland, 173
  - Fibroepithelial hyperplasia, 173
  - Mammary carcinoma, 173
- 6 Selected Lesions of the Thoracic Viscera, 175**
  - Cardiac tumors, 175
    - Hemangiosarcoma, 175
    - Malignant plasma cell tumor, 175
  - Pulmonary mass lesions, 178
    - Pulmonary carcinoma, 178
    - Pulmonary hemangiosarcoma, 180
    - Pulmonary adenomatosis, 181
  - Mediastinal tumors, 184
    - Mediastinal malignant lymphoma, 184
    - Thymoma, 186
  - Additional reading, 187
  - Cardiac tumors, 187
    - Hemangiosarcoma, 187
  - Pulmonary mass lesions, 187
    - Pulmonary carcinoma, 188
  - Mediastinal tumors, 188
    - Mediastinal malignant lymphoma, 188
    - Thymoma, 188
- 7 Selected Lesions of the Abdominal Viscera, 189**
  - Diseases that result in liver enlargement, 189
    - Vacuolar hepatopathy, 189
    - Bile duct hyperplasia, 189
    - Hepatocellular neoplasia, 191
    - Bile duct carcinoma, 193
    - Hepatic hemangiosarcoma, 194
  - Gastrointestinal lesions, 194
    - Eosinophilic inflammatory bowel disease, 195
    - Lymphoplasmacellular inflammatory bowel disease, 196
    - Gastrointestinal malignant lymphoma, 197
    - Gastrointestinal adenocarcinoma, 198
    - Gastrointestinal spindle cell tumor, 199
  - Kidney and bladder masses, 200
    - Pyogranulomatous inflammatory disease suggestive of FIP, 200
    - Renal carcinoma, 201
    - Renal malignant lymphoma, 202
    - Urinary bladder cystitis with reactive epithelial hyperplasia, 203
    - Urinary bladder polyp, 204
    - Transitional cell carcinoma, 205
  - Splenomegaly and splenic masses, 206
    - Extramedullary hematopoiesis, 207
    - Lymphoid nodular hyperplasia, 207
    - Malignant lymphoma, 209
    - Mast cell tumor, 209
    - Splenic torsion, 211

- Splenic hematoma, 211
- Splenic hemangiosarcoma, 214
- Splenic histiocytic sarcoma, 216
- Splenic malignant fibrous histiocytoma, 217
- Additional reading, 218
- Diseases that result in liver enlargement, 218
  - Vacuolar hepatopathy, 218
  - Nodular regeneration with bile duct hyperplasia, 218
  - Hepatocellular neoplasia, 218
  - Bile duct carcinoma, 218
  - Hepatic hemangiosarcoma, 218
  - Lymphoma, 218
- Gastrointestinal lesions, 218
  - Eosinophilic inflammatory bowel disease, 219
  - Lymphoplasmacellular inflammatory bowel disease, 219
  - Gastrointestinal malignant lymphoma, 219
  - Gastrointestinal adenocarcinoma, 219
  - Gastrointestinal spindle cell tumor, 219
- Kidney and bladder masses, 219
  - Pyogranulomatous inflammatory disease suggestive of feline infectious peritonitis, 219
  - Renal carcinoma, 219
  - Urinary bladder cystitis with reactive epithelial hyperplasia, 219
  - Urinary bladder polyp, 219
  - Transitional cell carcinoma, 219
- Splenomegaly and splenic masses, 219
  - Extramedullary hematopoiesis, 220
  - Lymphoid nodular hyperplasia, 220
  - Mast cell tumor, 220
  - Splenic torsion, 220
  - Splenic hemangiosarcoma, 220
- 8 Sample Handling, 221**
  - Cytological specimens, 221
  - Biopsy specimens, 227
  - Histology processing, glass slide production, routine stains, special stains, and additional tests, 232
  - Additional reading, 235
  - Cytology specimens, 235
  - Biopsy specimens, 236
- Index, 237