Index

Note: The letters ‘f’ and ‘t’ following the locators refer to figures and tables respectively

A
Acrotrichia, 18
Actinic keratosis (AK), 59, 60
Adenoid cystic carcinoma, 118, 124
Adipose tumors, 153
Adnexal neoplasms
  - benign cutaneous lymphadenoma, 112
  - benign mixed tumor, 108
  - hidradenoma, 109
  - large nodular trichoblastoma, 113
  - cylindroma, 111
  - pilomatrixoma, 114
  - poroma, 106
  - spiradenoma, 110
  - syringoma/microcystic adnexal carcinoma, 107
  - trichoepithelioma, 116
  - trichoolemmoma, 115
AFX, see Atypical fibroxanthoma (AFX)
Aggressive - BCC variants
  - basosquamous carcinoma, 87
  - infiltrating, 84
  - micronodular, 86
  - morpheaform, 85
challenges
  - BCC with follicular extension vs. superficial BCC, 101
  - BFH vs. nodular, 100
  - fatty follicle vs. nodular BCC, 102
  - keratinizing BCC vs. basosquamous carcinoma, 103
  - myxoid vs. micronodular, 99
  - TFI vs. superficial BCC, 97
  - trichoblastoma vs. nodular, 98
challenges, BCC simulant
  - benign cutaneous lymphadenoma, 93
  - benign mixed tumor, 90
  - cylindroma, 91, 92
  - hidradenoma, 89
  - keratinizing, 88
  - large nodular trichoblastoma, 94
  - pilomatrixoma, 95
  - spiradenoma, 91
  - TFI vs. superficial BCC, 97
  - trichoepithelioma, 94
  - TFI vs. superficial BCC, 97
  - trichoblastoma, 98
  - BCC simulant
Angiofibroma/Fibrous Papule, 154
Angiokeratoma, 153, 156, 161
Angiosarcoma (AS), 153, 161, 163, 166
Anticytokeratin (AE1/AE3), 201
Apocrine and eccrine glands, 34
AS, see Angiosarcoma (AS)
Atypical fibroxanthoma (AFX), 7, 163, 164, 165
  - dermis, 164
  - subcutaneous fat, 165
Atypical melanocytic hyperplasia/subtle MIS, 148
Automatic linear stainers, 12

B
  - aggressive - variants
    - basosquamous carcinoma, 87
    - infiltrating, 84
micronodular, 86
morpheaform, 85
Basal Cell Nevus syndromes, 79
Basaloid follicular hamartoma (BFH), 4, 100
  - vs. nodular, 100
Basket-weave Orthokeratin, 18
Basosquamous carcinoma, 87, 191, 197
Basosquamous or metatypical variant, 79
BCC, see Basal cell carcinoma (BCC)
BCC with follicular extension vs. superficial BCC, 101
Benign cutaneous lymphadenoma, 93, 112
Benign epidermal tumors
  - clear cell acanthoma, 43, 47
  - keratinoctytic dysplasia, 43
  - seborrhoeic keratosis, 45, 46
  - verruca vulgaris, 44
  - warty dyskeratoma, 48
Benign mesenchymal tumors
  - adipose tumors, 153
  - angiofibroma, 153
  - dermablone, 153


227
Benign mesenchymal tumors (cont.)
lipoma/angiolipoma, 157
nerve sheath tumors, 158
vascular tumors, 156
Benign mixed tumor, 90, 105, 108
Benign nerve sheath tumors, 158
Benign sebaceous tumors, 137
Benign vascular tumors, 156
Ber-EP4 (human epithelial antigen), 201, 207
BFH, see Basaloid follicular hamartoma (BFH)
Bone Dull blade effect, 211, 213
Bone marrow/lymph node disease, 171
Bone/periosteum, 38
Bowenoid actinic keratosis, 59, 61
Bowen’s disease, 59
C
Capillary hemangioma, 153, 156, 160
Carcinoembryonic antigen (CEA), 133, 141
CEA, see Carcinoembryonic antigen (CEA)
Challenges
BCC
BFH vs. nodular, 100
with follicular extension vs. superficial, 101
funny follicle vs. nodular BCC, 102
keratinizing BCC vs. basosquamous carcinoma, 103
myxoid vs. micronodular, 99
TFI vs. superficial BCC, 97
trichoblastoma vs. nodular, 98
BCC simulant
benign cutaneous lymphadenoma, 93
benign mixed tumor, 90
cylindroma, 91, 92
hidrandenoma, 89
keratinizing, 88
large nodular trichoblastoma, 94
pilomatricoma, 95
spiradenoma, 91
TFI vs. superficial BCC, 97
trichoepithelioma, 96
benign mesenchymal tumors
dermatofibroma/dermatofibrosarcoma protuberans, 159
lobular capillary hemangioma/Kaposi’s sarcoma, 160
Masson’s papillary thrombosis/angiosarcoma, 161
pseudo-tumors
chronic inflammation vs. lymphoepithelioma-like SCC, 51, 53–54
granulation tissue vs. chronic peritumoral inflammation, 55
keloid vs. desmoplasia associated with morpheaform BCC, 56
SCC simulant
eccrine syringometaplasia, 75
poroma, 74
squamous cell carcinoma
discoid lupus erythematosus, 76
Chondroid syringoma, 105
Chronic inflammation associated with rosacea, 40
Clear cell acanthoma, 43, 47
Clear cell bowens disease, 64
Conjunctiva, 21
normal adult histology & regional variation, 21
Contiguous basilar layer proliferation, 145
Cutaneous lymphoid hyperplasia, 171
Cutaneous malignancy, 43
Cutaneous tumors, cytopathology of
basal cell carcinoma (BCC), 191
basosquamous carcinoma, 191
melanoma, 191
merkel cell carcinoma, 191
Paget’s disease, 191
sebaceous carcinoma, 192
squamous cell carcinoma (SCC), 191
Cylindroma, 92, 105
Cytokeratin-7, 118, 133, 141
Cytokeratin immunostain, 127, 201, 205, 206
Cytopathology, definition, 191
D
Davidson dye system, 9
Delasco tissue stains, 9
Dermatofibroma, 153, 155, 159, 163, 168
or DFSP, challenges, 159
Dermatofibrosarcoma protuberans (DFSP), 4, 7, 153, 159, 163, 168
Dermis, normal adult histology & regional variation, 19
Dermo-epidermal junction, 145
DFSP, see Dermatofibrosarcoma protuberans (DFSP)
Direct or floating technique (embedding), 10–11
E
Eccrine syringometaplasia, 32, 75
EMA, see Epithelial membrane antigen (EMA)
Embedding, 6
placing tissue in block maintaining orientation., 6f
Epithelial membrane antigen (EMA), 133, 141
Epithelium, 3, 6, 7, 17, 18, 20, 21, 22, 24, 25, 27, 30, 32, 43, 48, 59,
60, 69, 81, 82, 87, 98, 102, 105, 118, 119, 123, 135, 136, 138,
141, 142, 155, 156, 163, 177, 191, 197, 221, 222
normal adult histology & regional variation, 18
F
Fibrous papule, 153, 154
Freeze bar method, 11
Fresh scar, 32
Funny follicle vs. nodular BCC, 102
G
Glass slide technique, 11
Grenz zone, 85, 153, 155, 171, 180
H
Hair follicle and sebaceous lobule, 31
Handling of specimen/frozen technique, 4, 4f, 127
Heat extractor method, 11
Hematoxylin and eosin (H&E), 12, 201
staining, 201
Hidradenocarcinoma, 117, 122
Hidrandenoma, 89, 109
Histologic grade, SCC
moderately differentiated SCC, 68
poorly differentiated SCC, 69, 70
well-differentiated SCC, 67
Histology with regional/ethnic variation
anal mucosa, 24
conjunctiva, 21
dermis, 19
epithelium, 18
ethnic variations, 28
human skin, 17
lip mucosa, 26
nail anatomy, 22
nasal mucosa, 23
normal dermal and subcutaneous structures
apocrine and eccrine glands, 34
bone/periosteum, 38
Index

chronic inflammation associated with rosacea, 39
fresh scar, 32
hair follicle and sebaceous lobule, 30
lymph node, 39
old scar, 33
skeletal muscle, 35
subcutaneous fat/cartilage, 36, 37
normal eyelid anatomy, 20
parotid gland, 30
penile mucosa, 27
salivary (minor) gland, 29
vagina mucosa, 25
Histotechnique and staining troubleshooting

cutting challenges, 218–222
preparation challenges, 214–217
staining challenges, 223–225
in vivo challenges, 210–213
Horn cysts, 43, 45
HPV, see Human papillomavirus (HPV)
Human papillomavirus (HPV), 43, 59, 65
Human skin, 17
normal adult histology & regional variation, 17
Hutchinson’s freckle, 145
Hyperplasia, 4, 43, 51, 137, 145, 148, 171
I
Imiquimod, 3
Immunohistochemistry applications
immunostains
Ber-EP4, 201
cytokeratin, 201
MART-1, 201
Immunoperoxidase techniques, 201
Immunostaining, 127
Imunohistochemical stains, 146
“Incidental asymptomatic” PNI, 183
Indolent - BCC variants
keratinizing, 88
nodular, 81
pinkus tumor, 83
superficial, 82
Inking, 5, 5f, 9, 10
Intradepidermal sebaceous carcinoma, 138
Intradermal nevus, 147
Intralesional chemotherapy, 3
K
Kaposi’s sarcoma, 153, 160
Keratinizing BCC vs. basosquamous carcinoma, 103
Keratinocytic dysplasia, 43, 59
Keratoacanthoma type squamous cell carcinoma, 72
Koilocytes, 43, 44
L
Langerhans cells, 145, 146
Large nodular trichoblastoma, 94, 113
Leiomyosarcoma (LS), 163, 167
Leptomeningeal carcinomatosis (LMC), 183
Leukemia cutis, 180
Leukocyte common antigen (LCA), 141
Lip mucosa, 26
normal adult histology & regional variation, 26
Lipoma/angiolipoma, 157
LMC, see Leptomeningeal carcinomatosis (LMC)
Lobular capillary hemangioma/Kaposi’s sarcoma, challenges, 160
Lobular capillary hemangioma (pyogenic granuloma), 153, 156, 160
Low grade cutaneous B-cell lymphoma, 179
LS, see Leiomyosarcoma (LS)
Lymph node, 39, 127, 134, 171, 174, 183
Lymphocytic infiltrates, 171
Lymphoid pathology
leukemia cutis, 180
low grade cutaneous B-Cell lymphoma, 179
lymph node, 174
lymphocytic infiltrates, 171
nodular lymphoid infiltrate-SCC, 175–177
perineural invasion lymphoid aggregates, 172
rosacea, 173
systemic B-cell lymphoma, 178
M
Maintenance record – cryotstat, 14r
Malignancy, 4, 43, 59, 117, 141
Malignant adnexal neoplasms
adenoid cystic carcinoma, 124
eccrine carcinoma not otherwise specified, 123
hidradenocarcinoma, 122
Microcystic Adnexal Carcinoma (MAC), 120
mucinous carcinoma, 125
porocarcinoma, 119
syringoid eccrine carcinoma, 121
Marjolin’s ulcer, 59
Masson’s papillary thrombosis/angiosarcoma, challenges, 161
Meibomian gland carcinoma, 133
Melanocyte pathology
histologic assessment of abnormal, pitfalls, 145
Melanoma, 191, 196
Melanoma in situ, 149, 202
Mart-1 immunostain, 203
vs. chronic sun damaged skin, 204
Merkel cell carcinoma, 3, 7, 127–130, 191, 198, 201
diffuse pattern, 128
nodular pattern, 130
trabecular pattern, 129
Merkel cells, 141, 145
Mesenchymal tumors, definition, 153
Microcystic adnexal carcinoma (MAC), 4, 107, 117, 120
Microinvasive well-differentiated SCC, 66
Mild Solar Elastras(dermatoheliosis), 18
Mohs and frozen section overview
cutting the specimen, 5–6
recommended ways to cut specimens, 5f
embedding, 6
placing tissue in block, 6f
handling of specimen/frozen technique, 4, 4f
histologic prerequisites to frozen section evaluation, 4
indications for frozen sections of skin, 3
inking, 5
orientation, 5
inking an ellipse, 5f
suture placed at designated point, 5f
technique
peel is unfolded, 7f
tumor/dermis and peel, external margin (orange representing), 6f
tumor (orange) is debulked with curette and beveled, 7f
Mohs technique
peel is unfolded, 7f
Mohs technique (cont.)
  tumor/dermis and peel, external margin (orange representing), 6f
tumor (orange) is debulked with curette and beveled, 7f
Morpheiform, 85
  basal cell carcinoma, 4
Mucinous carcinoma, 118, 125
Muir-Torre DNA-mismatch repair defect syndrome, 133

N
Nail anatomy, 22
  normal adult histology & regional variation, 22
Nasal mucosa, 23
Nerve sheath tumors, 158
NMSC, see Non-melanoma skin carcinoma (NMSC)
Nodular lymphoid infiltrate-SCC, 175–177
Non-melanoma skin carcinoma (NMSC), 3, 201
Normal dermal and subcutaneous structures
  apocrine and eccrine glands, 34
  bone/periosteum, 38
  chronic inflammation associated with rosacea, 39
  fresh scar, 32
  hair follicle and sebaceous lobule, 30
  lymph node, 39
  old scar, 33
  skeletal muscle, 35
  subcutaneous fat/cartilage, 36, 37
Normal eyelid anatomy, 20, 135

O
Oil red-O, 133
Old scar, 33
Oylindroma, 111

P
Paget cells, 141
Pagetoid scatter, 64, 138, 141, 145, 148
Paget’s disease, 133–134, 141–143, 191, 197
carcinoembryonic antigen (CEA), 141
leukocyte common antigen (LCA), 141
Papillary/reticular dermis, 19, 54
Papillary, reticular dermis, 19, 54
Parotid gland, 30
PEH, see Pseudoepitheliomatous hyperplasia (PEH)
Penile mucosa, 27
Perineural invasion (PNI)
  basal cell carcinoma, 184
  challenges
    peritumoral fibrosis (PF), 187
    RPI/RNEA, 188
  lymphoid aggregates, 172
  malignant melanoma, 185
  squamous cell carcinoma, 186
Perineural lymphomatoid infiltrate, 171
Perineural pathology, 3, 183–188
PNI, 183
Perinuclear vacuoles, 163, 167
Peri-ocular adnexae, 3
Peritumoral fibrosis (PF), 187
Photodynamic therapy, 3
Pilomatrixoma, 95, 105, 114
Pinkus type, 79
Porocarcinoma, 117, 119
Poroma, 74, 106

Precursor lesion, SCC
  Actinic Keratosis (AK), 60
  bowenoid actinic keratosis, 61
  squamous cell carcinoma in-situ, 62
Primary mucinous carcinoma, 118
Pseudoepitheliomatous hyperplasia (PEH), 43, 51–52, 54
Pseudotumors
  challenge
    chronic inflammation vs. lymphoepithelioma-like SCC, 51,
    53–54
    granulation tissue vs. chronic peritumoral inflammation, 55
    keloid vs. desmoplasia associated with morpheaform BCC, 56
    chronic inflammation vs. lymphoepithelioma-like SCC, 51
  definition, 51
  inflammatory, 51
  proliferative, 51
  pseudoepitheliomatous hyperplasia (PEH), 51–52
  remodeling, 51–52

Q
Quality assurance, Mohs histotechnology, 12–14
  air bubbles, prevention of, 13
  cutting, 11
  hair, 13
  holes in tissue sections, 13
  maintenance record – cryostat, 14
  sectioning
    direct or floating technique, 10–11
    embedding, 10–11, 10f
    freeze bar method, 11
    glass slide technique, 11
    heat extractor method, 11
    modified obstetric clamps (with mounting disc inserted), 11
    temperature, 10
  staining, 12
    hematoxylin and eosin (H&E), 12
    limonene xylene replacement, 12f
    mucin in reactive stroma, 12f
    mucin surrounds large cells with obvious nuclear atypia, 12f
  tissue preparation, 9–10
    mercurichrome as red dye, 9
  “vertical blinds” effect, 12

R
Radiotherapy, 3, 127, 141
Reactive neuroepithelial aggregates of the skin (RNEA), 188
Re-excision perineural invasion (RPI), 188
Remodeling, pseudotumors, 51–52
RNEA, see Reactive neuroepithelial aggregates of the skin (RNEA)
Rosacea, 40, 171, 173
RPI, see Re-excision perineural invasion (RPI)

S
Salivary (minor) gland, normal adult histology & regional variation,
  29, 118
Sarcomas
  angiosarcoma (AS), 163
  atypical fibroxanthoma (AFX), 163
  dermatofibrosarcoma protubersans (DFSP), 163
  leiomyosarcoma (LS), 163
Scalded skin syndrome, 3
SCC, see Squamous cell carcinoma (SCC)
SCC-In-situ arising in verruca (HPV Effect), 65
Schwann cells, 153
Schwannoma, 153, 158
Sclerosing morphology/perineural disease, 201
Sebaceous adenoma, 136
Sebaceous carcinoma, 133, 138, 139, 192, 199, 201
-invasive, 139
Sebaceous tumors
benign sebaceous tumors, 137
intradepidermal sebaceous carcinoma, 138
normal eyelid anatomy, 135
sebaceous adenoma, 136
sebaceous carcinoma-invasive, 139
Seborrheic keratosis, 43, 45, 46
Sectioning, histotechnology process
direct or floating technique (embedding), 10–11
embedding, 10–11, 10f
freeze bar method, 11
glass slide technique, 11
heat extractor method, 11
modified obstetric clamps, shown with mounting disc inserted, 11
temperature, 10
Skeletal muscle, 19, 20, 35, 135, 168
Skin, indications for frozen sections of, 3
Solar elastosis, 3, 19, 23, 149, 210, 213
Solar-induced hyperplasia/hyper trophy, 145
Spindle cell SCC, 73
Spiradenoma, 91, 110
Squamous cell carcinoma in-situ, 62
with follicular extension, 63
Squamous cell carcinoma (SCC), 191, 193
Bowen’s disease, 59
challenges
discoid lupus erythematosus, 76
challenges SCC simulant
eccrine syringometaplasia, 75
poroma, 74
histologic grade
moderately differentiated SCC, 68
poorly differentiated SCC, 69, 70
well-differentiated SCC, 67
Marjolin’s ulcer, 59
precursor lesion
Actinic Keratosis (AK), 60
b Bowenoid actinic keratosis, 61
squamous cell carcinoma in-situ, 62
variants
acantholytic SCC, 71
keratoacanthoma type squamous cell carcinoma, 72
microinvasive well-differentiated SCC, 66
SCC-In-situ arising in verruca (HPV effect) Bowen’s disease, 65
spindle cell SCC, 73
squamous cell carcinoma in-situ with follicular extension, 63
Squamous cell carcinomas (SCC), 7, 12, 43, 59–76, 79, 106, 127, 133, 186, 191, 193
Staining, histotechnology process
hematoxylin and eosin (H&E), 12
limonene xylene replacement, 12f
mucin in reactive stroma, 12f
mucin surrounds large cells with obvious nuclear atypia, 12f
Staphylococcal scalded skin syndrome, 3
Subcutaneous fat, 3, 6, 35, 36, 37, 39, 99, 153, 159, 163, 165, 168, 171, 174, 221
Suture placed at a designated point, 5f
Syngoid eccrine carcinoma, 117, 121
Systemic B-cell lymphoma, 178

T
TFI, see Tumor of the Follicular Infundibulum (TFI)
Tissue preparation, 9–10
-mercurichrome as red dye, 9
Toxic epidermal necrolysis, 3
Trabecular carcinoma, 127
Trichoblastoma, 94, 98, 105, 113
large nodular, 113
or trichoepithelioma, 105
Trichoepithelioma, 96, 116
Trichofolemmoma, 115
Tumor/dermis and the peel the external margin, orange representing, 6f
Tumor of the Follicular Infundibulum (TFI), 97
vs. superficial BCC, 97
Tumors
benign mesenchymal tumors, 153–161
benign mixed tumor, 90, 105, 108
benign nerve sheath tumors, 158
benign sebaceous tumors, 137
benign vascular tumors, 156
cytology of cutaneous tumors, 191–200
of the Follicular Infundibulum (TFI), 97
Peritumoral Fibrosis (PF), 187
pinkus tumor, 83
pseudotumors, 51–56
p53 tumor, 59
sebaceous tumors, 133–139
squamous tumor, 69
trabecular carcinoma, 43–49

V
Vagina mucosa, 25
Variants, SCC
- acantholytic SCC, 71
- clear cell Bowen’s disease, 64
- keratoacanthoma type squamous cell carcinoma, 72
- microinvasive well-differentiated SCC, 66
Vascular/fibrous tissues, 153
Vascular tumors, 153, 156
Verruca vulgaris, 44
Verruca (VV), 43, 44
“Vertical blinds” effect, 12

W
Warty dyskeratoma, 48
Wedge-shaped biopsies, 4f
Wound healing, see Pseudotumors