

# Subject Index

- Adipose tissue, *see* Obesity
- Aflibercept, prostate cancer trials 201
- Allergic inflammation
- angiogenesis
    - eosinophil role 143–145
    - role in development and pathophysiology 140, 141
  - eosinophil function 141–143
  - hypoxia response 146–149
  - overview 138–140
- Angiogenesis, *see also specific diseases and regulators*
- assays
    - comparison of assays 3
    - historical perspective 2
  - inhibitor history of study 8–13
- Angiopoietins
- Ang-1
    - multiple myeloma angiogenesis in bone marrow 183
    - neutrophil-mediated angiogenesis 132
  - immune cell expression
    - basophil 25, 26
    - eosinophil 26
    - macrophage 26, 27
    - mast cell 25
    - neutrophil 26
  - overview 16, 17
- Angiostatin
- angiogenesis inhibition 11
  - processing 115, 116
- Asthma, *see also* Allergic inflammation
- interleukin-17 and interleukin-25 role 28
  - vascular remodeling
    - overview 216–219
    - pharmacotherapy impact 220, 221
    - therapeutic implications 222, 223
- Avastin, angiogenesis inhibition 13
- Basophil
- angiopoietin expression 25, 26
  - interleukin-17 and interleukin-25 expression in asthma 28
  - vascular endothelial growth factor/receptor expression 19, 20
- Bevacizumab
- historical perspective 13
  - multiple myeloma management 190, 191
  - prostate cancer trials 200, 201, 210
  - T cell function effects 163
- Bisphosphonates, multiple myeloma management 192
- Bortezomib, multiple myeloma management 190
- Bv8, *see* Prokinectin-2
- Cabozantinib, prostate cancer trials 203, 204
- CD300a, eosinophil expression in allergic inflammation 148, 149
- Cediranib, prostate cancer trials 203
- Chemerin, chemoattraction in angiogenesis 101
- Chemokines
- angiogenesis regulation 93–96
  - classification 89–91
  - lymphangiogenesis regulation 99
  - receptors and signaling 91–93
  - regulatory T cells and tumor progression 164
  - structure 91
  - tumor angiogenesis studies
    - direct induction by tumor cells 98, 99
    - tumor-associated leukocytes 96–98

- Chronic obstructive pulmonary disease (COPD), vascular remodeling  
 overview 219, 220  
 pharmacotherapy impact 220, 221  
 therapeutic implications 222, 223
- Cilengitide, prostate cancer trials 209
- Cirrhosis, neuropilin role in liver 60
- c-MET, multiple myeloma angiogenesis in  
 bone marrow 182, 183
- Complement, chemoattraction in  
 angiogenesis 100, 101
- Dendritic cell (DC)  
 neuropilin expression 59  
 vascular endothelial growth factor/receptor  
 expression 24
- Endometriosis, neutrophil-mediated  
 angiogenesis 126, 127
- Endostatin  
 angiogenesis inhibition 11  
 processing 116
- Endothelial cell (EC)  
 history of isolation 2  
 leptin response and angiogenesis 158, 159,  
 162  
 multiple myeloma angiogenesis in bone  
 marrow 185, 186  
 neuropilin functions 54, 55  
 urokinase-type plasminogen activator  
 system and progenitor cell  
 expression 116, 117
- Eosinophil  
 activation 142  
 angiogenesis role in allergic  
 inflammation 143–145  
 angiopoietin expression 26  
 granules 142, 143  
 history of study 141  
 hypoxia response 146–149  
 interleukin-17 and interleukin-25  
 expression in asthma 28  
 nerve growth factor response 139  
 recruitment 141, 142  
 vascular endothelial growth factor  
 expression 144, 145
- Fibroblast growth factor (FGF)  
 FGF-2 in neutrophil-mediated  
 angiogenesis 131, 132  
 history of isolation 4
- Fumagillin, angiogenesis inhibition 10, 11
- Hepatocyte growth factor (HGF), multiple  
 myeloma angiogenesis in bone  
 marrow 181, 182
- Hypoxia-inducible factor-1 $\alpha$  (HIF-1 $\alpha$ )  
 eosinophil expression in allergic  
 inflammation 146, 147  
 multiple myeloma angiogenesis in bone  
 marrow 184, 188
- Interferon- $\alpha$  (IFN- $\alpha$ ), angiogenesis  
 inhibition 8
- Interleukin-8 (IL-8), neutrophil-mediated  
 angiogenesis 129, 130
- Interleukin-12 (IL-12), multiple myeloma  
 angiogenesis in bone marrow 183
- Interleukin-17 (IL-17)  
 angiogenic activity 27, 28  
 asthma role 28  
 neutrophil-mediated angiogenesis 132
- Interleukin-25 (IL-25), asthma role 28
- Ischemia, semaphorin role in  
 revascularization 81, 82
- Itraconazole, prostate cancer trials 208
- L1, neuropilin signaling 49–50
- Lenalidomide  
 multiple myeloma management 190  
 prostate cancer trials 205
- Leptin, regulatory T cell expression  
 endothelial cell response and  
 angiogenesis 158, 159, 162  
 immune regulation 157, 158
- Macrophage  
 angiogenic activity 21–23  
 angiopoietin expression 26, 27  
 antiangiogenic activity 23  
 lymphangiogenic activity 22  
 vascular endothelial growth factor/receptor  
 expression 20, 21
- Mast cell  
 angiopoietin expression 25  
 vascular endothelial growth factor/receptor  
 expression 17–19
- MicroRNA, multiple myeloma angiogenesis in  
 bone marrow 184, 185
- Monoclonal gammopathy of undetermined  
 significance (MGUS), multiple myeloma  
 progression 180

- Monocyte, vascular endothelial growth factor/  
receptor expression 20
- Multiple myeloma (MM)
  - angiogenesis in bone marrow
    - clinical studies 188–190
    - endothelial cell function 185, 186
    - genomic studies 184, 185
    - history of study 180
    - hypoxia 184, 188
    - inhibitor therapy 190–192
    - microenvironment role 187
    - regulators 181–184
  - progression 180
- Nerve growth factor (NGF), eosinophil  
response 139
- Neuropilins (NRPs)
  - angiogenesis role 17, 37, 38
  - basophil expression 20
  - cirrhosis role 60
  - dendritic cell production 24
  - development role 45–48
  - endothelial cell functions 54, 55
  - gene 39, 42, 43
  - immune system function 58, 59
  - isoforms 43–45
  - knockout mouse phenotype 46–48
  - ligands
    - semaphorins 40, 74
    - vascular endothelial growth  
factor 40–42
  - prospects for study 60, 61
  - receptors and signaling
    - cytosolic domain in signaling 52, 53
    - L1 49–50
    - plexins 48, 49
    - vascular endothelial growth factor  
signaling 50–52
  - regulatory T cell expression 24, 25, 59,  
159–161
  - structure 38–40
  - tumor expression 56–58
  - wound healing role 59, 60
- Neutrophil
  - angiopoietin expression 26
  - cytokines in angiogenesis
    - angiopoietin-1 132
    - fibroblast growth factor-2 131, 132
    - interleukin-8 129, 130
    - interleukin-17 132
    - oncostatin M 130, 131
    - overview 123, 124
    - prokinectin-2 128, 129
    - prospects for study 132, 133
    - vascular endothelial growth factor
      - pathological angiogenesis 126–128
      - physiological angiogenesis 125, 126
- Obesity
  - adipose tissue
    - angiogenesis
      - facilitation of obesity and weight  
loss 175, 176
    - overview 171
    - regulators 173–175
  - vasculature in white versus brown  
adipose tissue 172, 173
  - angiogenesis therapeutic targeting 177,  
178
- Oncostatin M (OSM), neutrophil-mediated  
angiogenesis role 130, 131
- Osteopontin (OPN)
  - allergic inflammation role 145
  - multiple myeloma angiogenesis in bone  
marrow 183
- Pentraxin 3, multiple myeloma angiogenesis  
in bone marrow 181
- PI-88, prostate cancer trials 201, 202
- Placental growth factor (PLGF), history of  
study 5
- Plasminogen activator inhibitor type 1  
(PAI1)
  - angiogenesis role 117, 118
  - overview 107, 108
- Plasminogen, activation system 106–108
- Plexins, neuropilin signaling 48, 49
- Prokinectin-2 (Bv8), neutrophil-mediated  
angiogenesis 128, 129
- Prostate cancer
  - angiogenesis
    - role in advanced cancer 198, 199
    - therapeutic targeting
      - aflibercept 201
      - bevacizumab 200, 201, 210
      - cabozantinib 203, 204
      - cediranib 203
      - lenalidomide 205
      - PI-88 201, 202
      - prospects 209–211
      - semaxinib 204
      - sorafenib 202

- sunitinib 202, 203
  - tasquinimod 205, 206
  - thalidomide 204, 210
- metastasis treatment
  - cilengitide 209
  - itraconazole 208
  - J591 207
  - overview 197, 198
  - selenium 208, 209
  - TNP-470 209
  - TRC105 207, 208
  - vadimezan 206, 207
- Protamine, angiogenesis inhibition 8, 9
- Regulatory T cell (Treg)
  - functional overview 155–157
  - leptin expression
    - endothelial cell response and
      - angiogenesis 158, 159, 162
    - immune regulation 157, 158
  - neuropilin expression 24, 25, 59, 159–161
  - therapeutic targeting 164, 165
  - tumor progression role 163, 164
  - vascular endothelial growth factor
    - blockade effects on immune
      - modulation 162, 163
    - expression 159–162
- Selenium, prostate cancer trials 208, 209
- Semaphorins
  - angiogenesis role 17, 71, 72
  - class 3 semaphorin signaling 75, 76
  - development role
    - lymphatic system 77, 78
    - vascular system 76, 77
  - ischemic tissue revascularization role 81, 82
  - neuropilin binding 40, 74
  - plexin binding 49
  - receptors 72–74
  - structure 72
  - tumor angiogenesis role 78–81
- Semaxinib, prostate cancer trials 204
- Sorafenib, prostate cancer trials 202
- Sphingosine-1-phosphate, chemoattraction in
  - angiogenesis 99, 100
- Sunitinib
  - prostate cancer trials 202, 203
  - T cell function effects 163
- Systemic sclerosis, urokinase-type
  - plasminogen activator in angiogenesis 115
- T cell, *see also* Regulatory T cell
  - neuropilin expression 58, 59
- Tasquinimod, prostate cancer trials 205, 206
- Thalidomide
  - historical perspective 12
  - multiple myeloma management 190
  - prostate cancer trials 204, 210
- Thrombospondin-1 (TSP-1)
  - adipose tissue 174
  - angiogenesis inhibition 10, 12
- Tissue-type plasminogen activator (tPA), fibrin
  - binding 107
- TNP-470, prostate cancer trials 209
- TRC105, prostate cancer studies 207, 208
- Tumor angiogenesis
  - chemokine studies
    - direct induction by tumor cells 98, 99
    - tumor-associated leukocytes 96–98
  - history of study 5–7
  - neuropilin expression 56–58
  - neutrophil-mediated angiogenesis 127, 128
  - prognostic significance 7, 8
  - semaphorin role 78–81
  - therapeutic targeting 170, 171
- Tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), macrophage
  - production 21, 22
- Urokinase-type plasminogen activator (uPA)
  - angiogenesis role 112–114
  - functional overview 110–112
  - processing 107
- Urokinase-type plasminogen activator receptor
 (uPAR)
  - angiogenesis role 112–114
  - endothelial progenitor cell expression 116, 117
  - functional overview 110–112
  - integrin binding 110, 111
  - processing 109, 110
  - prospects for study 118
  - structure 108, 109
- Vadimezan, prostate cancer studies 206, 207
- Vascular endothelial growth factor (VEGF)
  - adipose tissue angiogenesis 173, 174
  - asthma role 217, 218
  - basophil expression 19, 20
  - blockade, *see specific drugs*
  - chronic obstructive pulmonary disease
    - role 219, 220
  - dendritic cell expression 24

eosinophil expression 144, 145  
history of study 4, 5  
inhibitor development 13  
isoforms 16, 124, 198  
macrophage expression 20, 21  
mast cell expression 17–19  
monocyte expression 20  
multiple myeloma angiogenesis in bone  
  marrow 181–183  
neuropilin  
  binding 40–42  
  signaling 50–52  
neutrophil-mediated angiogenesis  
  pathological angiogenesis 126–128  
  physiological angiogenesis 125, 126  
receptors 16, 124, 198  
regulatory T cell  
  blockade effects on immune  
    modulation 162, 163  
  expression 159–162  
urokinase-type plasminogen activator in  
  activation 113  
Wound healing, neuropilin role 59, 60

