Index

AA. See Alopecia areata
Abnormal host immune response, 203
Absent B cells, antibody deficiency from, 64, 66
BTK genes and, 64
X-linked agammaglobulinemia, 66
Acquired immune deficiency syndrome (AIDS), 131. See also Human immunodeficiency virus
TB and, 233
Activation-induced cell death (AICD), 39
Active immunization, 37–38
Acute inflammatory demyelinating polyneuropathy (AIDP), 297. See also Guillain–Barré syndrome
Acute post streptococcal glomerulonephritis (APSGN), 326–328
biopsy staining for, 327
immune response sequences in, 319
SPEB and, 327
streptokinase and, 327
Acute rheumatic fever (ARF), 199–211
animal models of, 207–208
anorexia nervosa and, 210
etiology of, 199–200
etiology of, 203–207
abnormal host immune response, 203
mononuclear cellular infiltrates in, 206f
future research for, 209–210
genetic predisposition to, 201–202
HLA and, 202
heart reactive antibody titers in, 204–205, 204f, 205f
incidence rates for, 199
mortality rates for, decline of, 200f

M type strains of, 200
OCD and, 206
pathogenesis of, 200–201
group A streptococcus in, 200–201
staining for, 204f
immunofluorescent, 207f
streptococcal vaccines for, 208–209, 210f
Tourette’s syndrome and, 210
Adaptive immunity, 47–49
dC and, 47
to HIV, 135–136, 137f
MHC and, 47
TLRs and, 47–49, 48f
signaling for, 48–49
Adenosine nucleotide translocator (ANT), 223
Adhesion molecules, 10
Adoptive cell transfer, 13
Adoptive immunotherapy, 37
AICD. See Activation-induced cell death
AIDP. See Acute inflammatory demyelinating polyneuropathy
AIDS. See Acquired immune deficiency syndrome
AIH. See Autoimmune hepatitis
AIHA. See Autoimmune hemolytic anemia
AK. See Atopic keratoconjunctivitis
Alkylating agents, 33–34
Allergens and, 145
Allergic asthma. See Asthma
Allergic conjunctivitis, 150–152
AK, 151
animal models of, 151–152
GCP, 151
histopathological/lab findings for, 152f
perennial, 150
seasonal, 150
vernal, 150–151
contact dermatitis, 145
from food, 156–157
diagnosis of, 156
food tolerance v., 157
incidence rates for, 156
from peanuts, 156–157
RAST for, 156
hypersensitivity and, 145
delayed type, 145
immediate type, 145
incidence rates for, 145
of respiratory tract, 152–156
allergic asthma, 154–156
allergic rhinitis, 152–154
skin diseases, 157–160
AK, 159
angioedema, 157–158
atopic dermatitis, 158
atopic eczema, 158–159
contact agent locations for, 160f
contact dermatitis, 145,
159–160
urticaria, 157–158
Allergic rhinitis, 152–154
causes of, 153
disease states of, 153

Allergic diseases of; Skin diseases, allergic reactions and allergens and, 145
anaphylaxis and, 147–149
animal models of, 148
causes of, 148–149, 149f
definition of, 147
systemic, 147–149
treatment of, 148
atopy and, 146–147
geneic component of, 146
classification of, 146f
seasonal, 150
vernal, 150–151

Adaptive immunity, 47–49
dC and, 47
to HIV, 135–136, 137f
MHC and, 47
TLRs and, 47–49, 48f
signaling for, 48–49
experimental models of, 153–154
incidence rates of, 153

treatment of, 153

Alopecia areata (AA), 169–171
autoantibodies and, 170
clinical features of, 170
pathogenesis of, 170

treatment for, 171

ALPS. See Autoimmune lymphoproliferative syndrome

Amino acid domains, 3

Anaphylaxis, 147–149
animal models of, 148
causes of, 148–149, 149
food, 149
insect venom, 149
latex as, 149
penicillin, 148

definition of, 147

systemic, 147–149
basophils in, 147
mast cells and, 147

treatment of, 148

Angioedema, 157–158

Animal models
of AIH, 274

of allergic conjunctivitis, 151–152
of anaphylaxis, 148
of ARF, 207–208
for autoimmune diseases, 102, 103

for autoimmune thyroiditis, 107
BXSB, 102, 104, 186
MRL, 104, 185–186
for MS, 106
NZB, 104
for SLE, 102, 104
for TID, 106–107

for TMPD-induced lupus, 104–105
of B-CLL, 126–127
for Chagas’ disease, 214–216

T cells in, 215–216
of DCM, 224–225
of HIV, 138–139
for IDDM, 278–281
BB rat, 279–280
NOD mouse, 278–279
RIP mice, 280

T-cell receptor transgenic mice, 280
of MG, 303–304
of MS, 295–296
of myocarditis, 224–225
of neurological syndromes, 309–311

human models v., 310/

of psoriasis, 166
for rheumatic diseases, 177–179–182
AS, 196
BXSB, 102, 104, 186
congenic, 177
F1 hybrid, 184–185
inducible, 176

knockout, 176–177
MRL, 102, 104, 185–186
NZM2410, 186–187
PM, 193–194
PS, 192
RA, 179–182
spontaneous, 175–176
SS, 189
transgenic, 176–177

of TB, 236–237, 246–247
Cornell model, 237, 241

in vaccines, 246–247

Ankylosing spondylitis (AS), 194–196

animal models of, 196
clinical features of, 195
epidemiology of, 194

etiology of, 194–195

symptoms of, 195

treatment of, 195–196

Anorexia nervosa, 210

ANT. See Adenosine nucleotide translocator

Anti-B-lymphocyte therapy, 114

Antibodies, 3–7, 12–17.
See also Antibody deficiencies; Thymus lymphocyte cells

amino acid domains in, 3

from absent B cells, 64, 66
clinical manifestations of, 63
from CVID, 67–68
ICOS and, 68
incidence rates for, 67
from IgA deficiency, 68–69
race as factor in, 68

from IgG subclass deficiency, 69
from immunoglobulin isotope switching, 66–67
gene defects in, 66
microbial infection patterns in, 64/
treatment of, 69

Antibody-induced bullous lesions, 171–173
bullous pemphigoid, 172
dermatitis herpetiformis, 172–173
treatment for, 173

pemphigus vulgaris, 171–172, 172/
treatment for, 172

Antibody production, 12–17
adoptive cell transfer in, 13/

of B cells, 12–13
cellular immunity in, 14–15
clonal selection theory and, 12
immunological techniques in, 21–22

nonspecific effector molecules in, 15–17
complement component system with, 15–17

of plasma cells, 12
of T cells, 2, 13–14
adoptive cell transfer with, 13/
differentiation of, 13–14
production of, 13–14
TNF and, 14
Anticytokine agents, 113
Antigen-induced arthritis, 180–181
Antigen-presenting cells (APCs), 8, 11
Antigens, 2–3
antigen-induced arthritis, 180–181
in APSGN, 326–327
for β cells, 282–283
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
Antimalarial drugs, 113
Antigen-induced arthritis, 180–181
in APSGN, 326–327
foreign, 123
binding of, 6–7
for Chagas’ disease, 219
for GBS, 301
for GvHD, 342
haptens and, 3
Langerhans cells in, 12
MHC and, 9
in mucosal immune system, 255
in organ allograft rejection, 337
streptococcal, 49
in kidneys, 328
superantigens, 50
TNF and, 9
<table>
<thead>
<tr>
<th>Index</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoinflammatory syndromes, 84–85</td>
<td></td>
</tr>
<tr>
<td>Bacille Calmette-Guérin (BCG), 242–243</td>
<td></td>
</tr>
<tr>
<td>Bacterial evasion mechanisms, from infections, 51–53</td>
<td></td>
</tr>
<tr>
<td>antigenic variation as, 51</td>
<td></td>
</tr>
<tr>
<td>M protein in, 51</td>
<td></td>
</tr>
<tr>
<td>capsules and, 51</td>
<td></td>
</tr>
<tr>
<td>parasitic, 57–58</td>
<td></td>
</tr>
<tr>
<td>Bacterial infections, 49–50</td>
<td></td>
</tr>
<tr>
<td>from endotoxins, 50</td>
<td></td>
</tr>
<tr>
<td>M proteins and, 50, 51f</td>
<td></td>
</tr>
<tr>
<td>from streptococcal antigens, 49</td>
<td></td>
</tr>
<tr>
<td>Bacterial killing defects, 77–78</td>
<td></td>
</tr>
<tr>
<td>Bullous pemphigoid, 172</td>
<td></td>
</tr>
<tr>
<td>Burkitt’s lymphoma, 54</td>
<td></td>
</tr>
<tr>
<td>Bursa (B) lymphocyte cells, 2, 12–13, 120f</td>
<td></td>
</tr>
<tr>
<td>See also B-cell type chronic lymphocytic leukemia</td>
<td></td>
</tr>
<tr>
<td>activation of, 119</td>
<td></td>
</tr>
<tr>
<td>adoptive cell transfer with, 13f</td>
<td></td>
</tr>
<tr>
<td>antibody deficiencies and, 64, 66</td>
<td></td>
</tr>
<tr>
<td>BTK genes and, 64</td>
<td></td>
</tr>
<tr>
<td>autoimmunity from, 91</td>
<td></td>
</tr>
<tr>
<td>B-CLL and, 119–128</td>
<td></td>
</tr>
<tr>
<td>animal models of, 126–127</td>
<td></td>
</tr>
<tr>
<td>BCR role in, 119, 124, 125</td>
<td></td>
</tr>
<tr>
<td>clinical features of, 124–125</td>
<td></td>
</tr>
<tr>
<td>development of, 122–126</td>
<td></td>
</tr>
<tr>
<td>mutation status in, 120–122, 122f</td>
<td></td>
</tr>
<tr>
<td>therapeutic development for, 127–128</td>
<td></td>
</tr>
<tr>
<td>BTK genes, 64</td>
<td></td>
</tr>
<tr>
<td>Bruton’s tyrosine kinase (BTK) genes, 64</td>
<td></td>
</tr>
<tr>
<td>Bursa lymphocyte cells, 2, 12–13, 120f</td>
<td></td>
</tr>
<tr>
<td>See also B-cell type chronic lymphocytic leukemia</td>
<td></td>
</tr>
<tr>
<td>activation of, 119</td>
<td></td>
</tr>
<tr>
<td>adoptive cell transfer with, 13f</td>
<td></td>
</tr>
<tr>
<td>antibody deficiencies and, 64, 66</td>
<td></td>
</tr>
<tr>
<td>BTK genes and, 64</td>
<td></td>
</tr>
<tr>
<td>autoimmunity from, 91</td>
<td></td>
</tr>
<tr>
<td>B-CLL and, 119–128</td>
<td></td>
</tr>
<tr>
<td>animal models of, 126–127</td>
<td></td>
</tr>
<tr>
<td>BCR role in, 119, 124, 125f</td>
<td></td>
</tr>
<tr>
<td>clinical features of, 124–125</td>
<td></td>
</tr>
<tr>
<td>development of, 122–126</td>
<td></td>
</tr>
<tr>
<td>mutation status in, 120–122, 122f</td>
<td></td>
</tr>
<tr>
<td>therapeutic development for, 127–128</td>
<td></td>
</tr>
<tr>
<td>C1 inhibitor deficiency, 87</td>
<td></td>
</tr>
<tr>
<td>Cadherins, 10</td>
<td></td>
</tr>
<tr>
<td>Cardiac disease, immunological aspects of, 199–227. See also Acute rheumatic fever; Chagas’ disease; Dilated cardiomyopathy; Myocarditis</td>
<td></td>
</tr>
<tr>
<td>ARF, 199–211</td>
<td></td>
</tr>
<tr>
<td>animal models of, 207–208</td>
<td></td>
</tr>
<tr>
<td>anorexia nervosa and, 210</td>
<td></td>
</tr>
<tr>
<td>epidemiology of, 199–200</td>
<td></td>
</tr>
<tr>
<td>etiology of, 203–207</td>
<td></td>
</tr>
<tr>
<td>future research for, 209–210</td>
<td></td>
</tr>
<tr>
<td>genetic predisposition to, 201–202</td>
<td></td>
</tr>
<tr>
<td>heart reactive antibody titers in, 204–205, 204f, 205f</td>
<td></td>
</tr>
<tr>
<td>incidence rates for, 199</td>
<td></td>
</tr>
<tr>
<td>mortality rates for, decline of, 200f</td>
<td></td>
</tr>
<tr>
<td>M type strains of, 200</td>
<td></td>
</tr>
<tr>
<td>OCD and, 206</td>
<td></td>
</tr>
<tr>
<td>pathogenesis of, 200–201</td>
<td></td>
</tr>
<tr>
<td>staining for, 204f</td>
<td></td>
</tr>
<tr>
<td>streptococcal vaccines for, 208–209, 210f</td>
<td></td>
</tr>
<tr>
<td>Tourette’s syndrome and, 210</td>
<td></td>
</tr>
<tr>
<td>Chagas’ disease, 211–221</td>
<td></td>
</tr>
<tr>
<td>animal models of, 214–216</td>
<td></td>
</tr>
<tr>
<td>epidemiology of, 211–212</td>
<td></td>
</tr>
<tr>
<td>future research for, 221</td>
<td></td>
</tr>
<tr>
<td>immune response mediators for, 220f</td>
<td></td>
</tr>
<tr>
<td>innate immune response for, 212–213</td>
<td></td>
</tr>
<tr>
<td>mode of transmission for, 211–212</td>
<td></td>
</tr>
<tr>
<td>molecular mimicry in, 218</td>
<td></td>
</tr>
<tr>
<td>pathogenesis of, 216–218, 221</td>
<td></td>
</tr>
<tr>
<td>T. cruzi and, 211–221, 219f</td>
<td></td>
</tr>
<tr>
<td>tissue tropism for, 213–214</td>
<td></td>
</tr>
<tr>
<td>DCM/myocarditis, 222–227</td>
<td></td>
</tr>
<tr>
<td>animal models of, 224–225</td>
<td></td>
</tr>
<tr>
<td>autoimmune considerations of, 222–223</td>
<td></td>
</tr>
<tr>
<td>clinical features of, 223–224</td>
<td></td>
</tr>
<tr>
<td>environmental features of, 224</td>
<td></td>
</tr>
<tr>
<td>etiology of, 222</td>
<td></td>
</tr>
<tr>
<td>future research for, 226–227</td>
<td></td>
</tr>
<tr>
<td>genetic features of, 223–224</td>
<td></td>
</tr>
<tr>
<td>treatment for, 225–226</td>
<td></td>
</tr>
<tr>
<td>Cell-surfaced-based inactivators, 86–87</td>
<td></td>
</tr>
<tr>
<td>Cell therapy, for autoimmune diseases, 116</td>
<td></td>
</tr>
<tr>
<td>Cellular immunity, 14–15</td>
<td></td>
</tr>
<tr>
<td>Cellular response, in immune system, 1</td>
<td></td>
</tr>
<tr>
<td>Cellular vaccines, 42–43, 141–142</td>
<td></td>
</tr>
<tr>
<td>DC and, 42–43</td>
<td></td>
</tr>
<tr>
<td>with T cells, 142</td>
<td></td>
</tr>
<tr>
<td>Central nervous system. See Neurological syndromes, immune-mediated</td>
<td></td>
</tr>
<tr>
<td>Cerebral malaria, 57</td>
<td></td>
</tr>
<tr>
<td>Cerebrospinal fluid (CSF) analysis, 294</td>
<td></td>
</tr>
<tr>
<td>CGD. See Chronic granulomatous disease</td>
<td></td>
</tr>
<tr>
<td>Chagas, Carlos, 211</td>
<td></td>
</tr>
<tr>
<td>Chagas’ disease, 211–221</td>
<td></td>
</tr>
<tr>
<td>animal models of, 214–216</td>
<td></td>
</tr>
<tr>
<td>T cells in, 215–216</td>
<td></td>
</tr>
<tr>
<td>epidemiology of, 211–212</td>
<td></td>
</tr>
<tr>
<td>future research for, 221</td>
<td></td>
</tr>
<tr>
<td>immune response mediators for, 220f</td>
<td></td>
</tr>
<tr>
<td>innate immune response for, 212–213</td>
<td></td>
</tr>
<tr>
<td>with GM-CSF, 212–213</td>
<td></td>
</tr>
<tr>
<td>with LPS, 212–213</td>
<td></td>
</tr>
<tr>
<td>mode of transmission for, 211–212</td>
<td></td>
</tr>
<tr>
<td>molecular mimicry in, 218</td>
<td></td>
</tr>
<tr>
<td>pathogenesis of, 216–218, 221</td>
<td></td>
</tr>
<tr>
<td>autoimmunity and, 217–218</td>
<td></td>
</tr>
<tr>
<td>parasite-directed, 218, 221</td>
<td></td>
</tr>
</tbody>
</table>
CVID.

CSF analysis.

Crohn’s disease, 261–262

Corticosteroids, 33

Cornell model, for TB, 237, 241

Coombs test, for AIHA, 94

Contact dermatitis, 145, 159–160

Complement assays, 24–25

Complement component system, 15–17

complement component system (CMIS), 254

Complement system deficiency, 67–68

ICOS and, 68

incidence rates for, 67

Complement component system, 15–17

opsonization in, 15

pathways in, 15–17, 16/f

Complement system deficiency, 85–87, 86/f

autoimmunity and, 86

C1 inhibitor deficiency, 87
cell-surfaced-based inactivators, 86–87

factor H deficiency and, 86

MBL and, 85

Contact dermatitis, 145, 159–160

testing for, 160

Coombs test, for AIHA, 94/f

Cord blood cells, 136/f

Cornell model, for TB, 237, 241

Corticosteroids, 33

for asthma, 155

for autoimmune diseases, 112–113

side effects of, 33

Crohn’s disease, 261–262

characteristics of, 262/f

incidence rates for, 261

management of, 262

CSF analysis, See Cerebrospinal fluid analysis

CVID. See Common variable immune deficiency

Cyclosporin, 34

Cytokine immunomodulation, 39–41

AICD and, 39

interleukins and, 40–41, 41/f

structure/signaling pathways for, 39/f

TNF and, 40–41

Cytokines, 3, 10–11

chemokines, 10

Cytokine therapy, 36–37

interferons and, 36–37

interleukinos, 37

Cytotoxic T cells, 14

DC. See Dendritic cells
dC vaccines. See Dendritic cell vaccines

Delayed type hypersensitivity (DTH), 14, 145

latent tuberculosis and, 235

Delayed-type hypersensitivity (DTH), 318–319

Dendritic cells (DC), 17–18

adaptive immunity and, 47

follicular, 12

HIV and, role in, 134–135

immature/mature, 17

macropinocytosis and, 17–18

in skin, 163–164

vaccines with, 42–43

Dendritic cell (DC) vaccines, 42–43

FCS and, 42

Deoxyribonucleic nucleic acid (DNA).
See also DNA technology assays

DNA technology assays, 28–32

DNA hybridization, 28, 29/f

DNA technology assays, 28–32

for analysis, 28–29

hybridization, 29/f

for PCR, 29–30

DNA vaccines, 245–246

DTH. See Delayed type hypersensitivity; Delayed-type hypersensitivity

EA. See Early antigens

EAE. See Experimental autoimmune encephalomyelitis

EAM. See Experimental autoimmune myositis

Early antigens (EA), 53

EBNA. See Epstein-Barr nuclear antigen

EBV. See Epstein-Barr virus

Ehrlich, Paul, 91

ELISAs. See Enzyme-linked immunosorbent assays

Endocrine disease, immunological aspects of, 277–290. See also Insulin-dependent diabetes mellitus

Endotoxins, 42

Enzyme-linked immunosorbent assays (ELISAs), 23

OD readings for, 23

Epstein-Barr nuclear antigen (EBNA), 53

Epstein-Barr virus (EBV), 53–55

antibody response to, 53

EBNA, 53

IgG, 53

IgM, 53

YCA, 53

Burkitt’s lymphoma and, 54

homeostasis disorders and, 80, 83

immunosuppressive therapy for, 54

as lymphoma, transformation of, 55/f

lymphoproliferative syndrome and, 54

Disease-modifying antirheumatic drugs (DMARDS), 179

DMARDS. See Disease-modifying antirheumatic drugs

DNA. See Deoxyribonucleic acid

DNA hybridization, 28, 29/f

DNA technology assays, 28–32

for analysis, 28–29

hybridization, 29/f

histocompatibility in, 30–31

MHC in, 30–31

microarray, 31–32, 31/f

for PCR, 29–30

Dengue virus, 245–246

DTH. See Delayed type hypersensitivity; Delayed-type hypersensitivity

Enzyme-linked immunosorbent assays (ELISAs), 23

OD readings for, 23

Epstein-Barr nuclear antigen (EBNA), 53

Epstein-Barr virus (EBV), 53–55

antibody response to, 53

EBNA, 53

IgG, 53

IgM, 53

YCA, 53

Burkitt’s lymphoma and, 54

homeostasis disorders and, 80, 83

immunosuppressive therapy for, 54

as lymphoma, transformation of, 55/f

lymphoproliferative syndrome and, 54

T. cruzi and, 211–221

antigens for, 219/f

tissue tropism for, 213–214

Chains, in antibodies, 3–4, 4/f

Chan, John, 241

Chase, Merrill, 1

Chemokines, 10

Chronic gastritis, 256

Chronic granulomatous disease (CGD), 77–78
diagnosis of, 78

CIA. See Collagen-induced arthritis

Cirrhosis.

CIA.

Chronic granulomatous disease (CGD), 77–78
diagnosis of, 78

CIA. See Collagen-induced arthritis

Cirrhosis.

CIA.

Chronic granulomatous disease (CGD), 77–78
diagnosis of, 78

CIA. See Collagen-induced arthritis

Cirrhosis.

CIA.
Gastrointestinal tract diseases, 255–263. See also Crohn’s disease; Ulcerative colitis
anatomy, 252f

GSE, 258–260
cause of, 258
diagnosis of, 259–260
generic role in, 258
MHC and, 259
symptoms of, 258
IBD and, 260–263
Crohn’s disease, 261–262
PSC and, 272
ulcerative colitis, 262–263
PA, 255–258, 256f
chronic gastritis and, 256
diagnosis of, 257
treatment of, 257
GM. See Glomerular basement membrane
GBS. See Guillain Barré syndrome
Gene therapy
for autoimmune diseases, 116
for psoriasis, 169
Genomics, psoriasis and, 166–167
Giant papillary conjunctivitis
(GPC), 151
Glomerular basement membrane
(GBM), 313–315
structure of, 313–314, 314f, 315f
Glucocorticoids, 193
Gluten-sensitive enteropathy
(GSE), 258–260
cause of, 258
diagnosis of, 259–260
generic role in, 258
MHC and, 259
symptoms of, 258
GM-CSF. See Granulocyte-macrophage colony-stimulating factor
GPC. See Giant papillary conjunctivitis
Graft-versus-host-disease (GvHD), 343–344
antigens for, 342, 343/
forms of, 341–342
prevention of, 343
Graft-versus-leukemia/lymphoma (GvL), 343–344
Granulocyte-macrophage colony-stimulating factor (GM-CSF), 212–213
Graves’ disease, 96
Group A streptococcus, 200–201
schematic cross-section of, 202f
GSE. See Gluten-sensitive enteropathy
Guillain Barré syndrome (GBS), 63, 297–301
antigens for, 301
autoantibody sites of action, 300f
immune response in, 298f
MHC and, 301
molecular mimicry in, 299
symptoms of, 297
treatment for, 301
vaccines as possible cause of, 299–300
Gut-associated lymphoid tissue (GALT), 251–254
anatomy of, 251, 252f, 253
lymphocyte population of, 253–254
intraepithelial, 253
lamina propria, 253
T3 cells, 253–254
GvHD. See Graft-versus-host-disease
GvL. See Graft-versus-leukemia/lymphoma
Hapten, 3
Hashimoto’s thyroiditis, 100–102
cause of, 101
imaging studies for, 100–101
indications for, 101f
HAV. See Hepatitis A virus
HBV. See Hepatitis B virus
HCV. See Hepatitis C virus
HDV. See Hepatitis D virus
Heart reactive antibody titer, 204–205, 204f, 205f
Helper T cells, 33
Hematopoetic stem cell transplantation (HSCT), 73
Hemagglutocytic lymphohistiocytosis (HLH), 81
Hemopoietic stem cell transplantation (HSCT), 339–345
for autoimmune diseases, 115
GvHD and, 341–343
antigens for, 342, 343/
forms of, 341–342
prevention of, 343
GvL and, 343–344
indications for, 339
pretransplant regimens for, 340, 341f
sources for, 339–340
Hench, Philip, 112
Hepatitis A virus (HAV), 268
Hepatitis B virus (HBV), 265–266
incidence rates for, 265
stages of, 265
vaccines for, 266
Hepatitis C virus (HCV), 266–268
biopsy for, 268
incidence rates for, 266–267
pathology of, 267
symptoms of, 267
treatment for, 268
Hepatitis D virus (HDV), 268
Herpes simplex virus, 87–88
HIES. See Hyper-IgE syndrome
Histocompatibility assays, 30–31
Histocyes, 45
HIV. See Human immunodeficiency virus
HLA. See Human leukocyte antigens
HLH. See Hemophagocytic lymphohistiocytosis
Homeostasis disorders, 80–85, 81
for autoimmunity development, 83–84
ALPS, 83–84
immune dysregulation polyendocrinopathy, 83
XLP, 82–83
autoinflammatory syndromes, 84–85
in cystic pathways, 80, 82
EBV and, 80, 83
HLH, 80
Horror autotoxicus, 91
HPV. See Human papilloma virus
HSCT. See Hemopoietic stem cell transplantation
Human immunodeficiency virus (HIV), 54, 56, 131–142
animal models of, 138–139
future research for, 142
genome of, 140
infection course of, 133
infection demographics for, 131
maternal-infant models for, 135–136
progression patterns for, 131, 134–136
adaptive immunity in, 135–136, 137
cord blood cells in, 136
DC role in, 134–135
in ESN women, 134–136
NEF protein marker in, 131, 134
SIV and, 131, 134
TB and, 233
types of, 139–140
vaccines for, 139–142
cellular, 141–142
inactivated, 141
live attenuated, 140–141
protein subunit, 141
vaginal transmission of, 132
Human leukocyte antigens (HLA). See also Major histocompatibility complex
ARF and, 202
transplantation and, 331–332
Human papilloma virus (HPV), 38
Humoral response, in immune system, 1
“Hygiene hypothesis,” 48
Hyper-IgE syndrome (HIES), 88
IBD. See Inflammatory bowel disease
ICOS. See Inducible co-stimulating receptor
IDDM. See Insulin-dependent diabetes mellitus
Idiotype determinant, 3
IgA deficiency, 68–69
diagnosis of, 320
in mucosal immune system, 254–255
race as factor in, 20, 68
as renal disease, 319
IgG molecules, 4
antibody deficiencies from, 69
EBV and, 53
IgM molecules, 4
EBV and, 53
Immediate type hypersensitivity, 145
Immune complex disease, 96–97
Immune dysregulation polyendocrinopathy, 83
Immune-mediated neurological syndromes. See Neurological syndromes, immune-mediated
Immune regulation, 33–43. See also Immunopotentiation antibodies and, 34–35
in cancer therapies, 35
monoclonal, 35
cellular vaccines and, 42–43
DC and, 42–43
cytokine immunomodulation and, 39–41
AICD and, 39
interleukins and, 40–41, 41
structure/signaling pathways for, 39
TNF and, 40–41
immunopotentiation, 36–38
adoptive immunotherapy and, 37
cytokine therapy and, 36–37
immunization and, 37–38
immunosuppression, 33–36
with immunosuppressive drugs, 33–34, 36
with plasmapheresis, 35–36
with total lymphoid irradiation, 36
monoclonal antibodies and, 35, 35
Immune system. See also Antibody production;
Tissue damage pathways
adhesion molecules, 10
antibodies, 3–7, 12–17
amino acid domains in, 3
exons in, 5–6
genetic production of, 6
hypervariable regions of, 3
idiotype determinant in, 3
IgG molecules, 4
IgM molecules, 4
light chains in, 3–4, 4
recombination events with, 6
variable regions of, 3
antigens, 2–3
binding of, 6–7
haptns and, 3
MHC and, 9
APCs in, 8, 11
cellular response in, 1
components of, 1–19
cytokines, 3, 10–11
chemokines, 10
humoral response, 1
interleukins, 3
lymphocytes in, 2, 11
bursa, 2, 12–13
development/differentiation of, 2
thymus, 2, 13–14
macrophages in, 17–18
DC, 17–18
mature, 18
MHC, 2, 8–9
antigens and, 9
APC and, 8
polymorphism and, 8
representation of, 8
restriction of antigen recognition in, 9
neutrophils in, 18
NK cells in, 18–19
response initiation of, 11–12
TCR in, 7–8
helper, 8
structure of, 7
antigen processing pathways in, 19–20
hypersensitivity reactions in, 19–20
Immunization, 37–38
active, 37–38
passive, 38
with vaccines, 37–38
Immunoblots, 23–24, 25
Immune deficiency diseases, 61–89. See also Antibody deficiencies;
Homeostasis disorders; Phagocyte deficiencies from antibody deficiencies, 63–69, 65f
from absent B cells, 64, 66
from IgA deficiency, 68–69
from IgG subclass deficiency, 69
from immunoglobulin isotope switching, 66–67
microbial infection patterns in, 64
treatment of, 69
causes of, 62
complement system deficiency and, 85–87, 86
autoimmunity and, 86
C1 inhibitor deficiency, 87
cell-surfaced-based inactivators, 86–87
factor H deficiency and, 86
MBL and, 85
from DNA repair effects, 79–80
AT, 79–80
Nijmegen breakage syndrome, 80
HIV, 54, 56
homeostasis disorders, 80–85, 81f
for autoimmunity development, 83–84
autoinflammatory syndromes, 84–85
in cystic pathways, 80, 82
from infection barrier defects, 61–63
from integumentary damage, 61
from tissue damage, 62
from vascular perfusion, 61
innate immunity defects, 87–88
herpes simplex virus and, 87–88
HIES, 88
WHIM syndrome, 88
operational classification of, 63f
from phagocyte deficiencies, 74–79
bacterial killing defects, 77–78
leukocyte migration defects, 75–77
macrophage defects, 78–79
neutropenia, 74–75
PID, 63
incidence rates for, 61
SCID, 70–74
classification of, 71–73, 71f
clinical features of, 71
incidence rates for, 70
Ommen's syndrome, 72
treatment of, 73–74
from T-cell deficiency, 69–74
causes of, 70f
DGS, 74
fungal infections and, 70
SCID and, 73–74
Wiskott-Aldrich syndrome, 79
Immunoglobulin measurements, 66–67
Immunoglobulin superfamily, 10
Immunoglobulin isotope switching, 66–67
gene defects in, 66
Immunological assays, 22–25
ELISAs, 23
OD readings for, 23
immunoblots, 23–24, 25f
Immunological techniques, 21–32.
See also Assays; Immunological assays; Lymphocytic assays
in antibody production, 21–22
assays, 22–32
immunological, 22–25
lymphocytic, 25–32
Immunopotentiation, 36–38
adoptive immunotherapy and, 37
cytokine therapy and, 36–37
interferons and, 36–37
immunization and, 37–38
active, 37–38
passive, 38
with vaccines, 37–38
Immunosuppression, 33–36
with immunosuppressive drugs, 33–34, 36f
alkylating agents, 33–34
corticosteroids, 33
cyclosporin, 34
thiopurines, 33
for transplantation, 336–337
with plasmapheresis, 35–36
with total lymphoid irradiation, 36
Immunosuppressive drugs, 33–34, 36f
alkylating agents, 33–34
corticosteroids, 33
cyclosporin, 34
thiopurines, 33
Immunosuppressive therapy, for EBV, 54
Inactivated viral vaccines, 141
Inducible co-stimulating receptor (ICOS), 68
Induction agents, 335–336
Infection barrier defects, 61–63
from integumentary damage, 61
from tissue damage, 62
from vascular perfusion, 61
Infections, 45–58. See also Viral infections
adaptive immunity to, 47–49
DC and, 47
MIFC and, 47
TLRs and, 47–49, 48f
autoimmunity diseases and, in pathogenesis of, 110
from bacteria, 49–50
from endotoxins, 50
M proteins and, 50, 51f
from streptococcal antigens, 49
from bacterial evasion, 51–53
antigenic variation as, 51
capsules and, 51
parasitic, 57–58
fungal, 56–57
nonspecific resistance to, 45–47
from macrophages, 45
organs/systems for, 46f
from phagocytes, 45
from polymorphonuclear leukocytes, 45
from toll receptors, 46
parasitic, 57–58
from superantigens, 50, 52f
binding of, 51f
S. aureus, 50
viral, 53–56
EBV, 53–55
herpes simplex, 87–88
HIV, 54, 56
Inflammatory bowel disease (IBD), 260–263
Crohn’s disease, 261–262
characteristics of, 262f
incidence rates for, 261
management of, 262
PSC and, 272
ulcerative colitis, 262–263
characteristics of, 262f
environmental causes of, 262–263
treatment for, 263
Innate immunity defects, 87–88
herpes simplex virus and, 87–88
HIES, 88
WHIM syndrome, 88
Insect venom, 149
Insulin-dependent diabetes mellitus (IDDM), 277–290
animal models of, 278–281
BB rat, 279–280
NOD mouse, 278–279
RIP mice, 280
β cells, 279f, 282–283
antigens for, 282–283
intra-thymic negative selection and, 282–283
T cells and, 282
β cells, 279
islet-specific response by, 282–283
T cells and, 282
clinical presentation of, 277–278
diagnosis of, 287–289
with immunoassays, 287–288
LADA and, 288
environmental factors for, 284–285
epidemiology of, 278f
etiology of, 283–285, 283f
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
287
f
etiology of, 283–285, 283f,
autoimmune diseases and, 99
in DNA technology assays, 30–31
GBS and, 301
GSE and, 259
polymorphism and, 8
representation of, 8
restriction of antigen recognition in, 9
transplantation and, 332–333
Malaria, 57–58
Mononuclear cellular infiltrates, 117
Mannose-binding lectin (MBL), 85
Mast cells, 147
Maternal-infant models, for HIV, 135–136
MBL. See Mannose-binding lectin
MCD. See Minimal change disease
McKinney, John, 240
Membranoproliferative glomerulonephritis (MGN), 323
classification of, 323
treatment of, 323
Membranous nephropathy, 322
Mesenchymal cells, 117
Methotrexate, 113
MG. See Myasthenia gravis
MHC. See Major histocompatibility complex
Microarray assays, 31–32, 31f
Microbial infection patterns, 64f
Minimal change disease (MCD), 320–321
treatment for, 321
incidence rates for, 320–321
treatment for, 321
Mixed cryoglobulinemia, 328–329
Monoclonal antibodies, 22
immune regulation and, 35, 35f
cancer therapies, 34f in cancer therapies, 34f
TNF and, 35
Mononuclear cellular infiltrates, 206f
MGN. See Membranoproliferative glomerulonephritis
M proteins, 30, 31f in bacterial evasion
mechanisms, 51
MRL animal model (mice), 102, 104, 185–186
MS. See Multiple sclerosis
Mucosa-associated lymphoid tissue (MALT), 254
Mucosal immune system, 251–255. See also Gut-
associated lymphoid tissue
antigen sampling and, 255
CMIS and, 254
GALT and, 251–254
anatomy of, 251, 252f, 253
lymphocyte population of, 253–254
MALT and, 254
OT in, 255
secretory IgA and, 254–255
Multiple sclerosis (MS), 106
animal models of, 295–296
diagnosis of, 294
with CSF analysis, 294
IDDM and, 286f
incidence rates for, 293–294
symptoms of, 294–295
treatment of, 296–297
Myasthenia gravis (MG), 96
animal models of, 303–304
antibodies for, 303–304
genetic factors for, 303
Lambert-Eaton syndrome and, 303
nicotinic cholinergic neuromuscular junction in, 302f
treatment for, 304–305
MS, 106, 293–297
animal models of, 295–296
diagnosis of, 294
IDDM and, 286f
incidence rates for, 293–294
symptoms of, 294–295
treatment of, 296–297
SLE, 91, 97–99, 182–187,
305–309
animal models of, 102, 104,
184–187, 308–309
antibodies for, 306–307
clinical features of, 182–183,
183f
clinical presentation of, 307–308
cognitive disorders with, 183
etiology of, 182–183,
305–306
incidence rates for, 182
indications for, 98f
kidneys and, 183
Lupus cerebritis and, 305
neuropsychiatric manifestations of, 183
pathogenesis of, 182–183
symptoms of, 305–306
treatment for, 98–99,
183–184, 309
types of, pathogenic
mechanisms in, 307f
Neutropenia, 74–75
causes of, 75f
Neutrophils, 18
New Generation Vaccines, 209
New York Times, 131
Nicotinic cholinergic neuromuscular junction, 302f
Nijmegen breakage syndrome, 80
NK cells. See Natural killer cells
NOD mouse (animal model), 278–279
Nonspecific effector molecules, 15–17
complement component system with, 15–17
opsonization in, 15
pathways in, 15–17, 16f
Nonspecific resistance, to infection, 45–47
from macrophages, 45
organs/systems for, 46
from phagocytes, 45
from polymorpholeukocytes, 45
from toll receptors, 46
TLR, 47
Nonsteroidal anti-inflammatory drugs (NSAIDs), 112
for PSS, 191
for RA, 179
NSAIDs. See Nonsteroidal anti-inflammatory drugs
NZB animal model (mice), 104
NZM2410 animal model (mice), 186–187
Obessive-compulsive disorder (OCD), 206
OD. See Obsessive-compulsive disorder
OD. See Optical density
Ommn’s syndrome, 72
Opsonization, 15
Optical density (OD), 23
Oral tolerance (OT), in mucosal immune system, 255
Organ allograft rejection,
334–337
acute, 335
antigens for, 337f
chronic, 335
hyperacute, 334–335
immunosuppressive drugs for, 336–337
induction agents for, 335–336
management/prevention of, 335–337
OT. See Oral tolerance, in mucosal immune system
PA. See Pernicious anemia
PAMP. See Pathogen-associated molecular patterns
Parasitic infections, 57–58
bacterial evasion with, 57–58
malaria, 57–58
Passive immunization, 38
Pathogen-associated molecular patterns (PAMP), 46–47
PRR and, 47
Pattern recognition receptors (PRR), 47
PBC. See Primary biliary cirrhosis
PCR assays. See Polymerase chain reaction assays
Pemphigus vulgaris, 171–172, 172f
treatment for, 172
Penicillin, 148
Perennial allergic conjunctivitis, 150
Pernicious anemia (PA), 255–258, 256f
gastrointestinal and, 256
diagnosis of, 257
treatment of, 257
with vitamin B12, 257
phagocyte deficiencies, 77–78
carcinoma, 77
leukocyte migration defects, 78–79
neutropenia, 74–75
causes of, 75f
Phagocytes, 45
Psantadosi, Anne, 140
PID. See Primary immunodeficiency
Plasma cells, 12
Plasma exchange. See Plasmapheresis
Plasmapheresis, 35–36
PM. See Polymyositis
Polyclonal antibodies, 21–22
Polymerase chain reaction (PCR) assays, 29–30
Polymorpholeukocytes, 45
Polymyositis (PM), 192–194
animal models of, 193–194
clinical features of, 193
EAM and, 193–194
epidemiology of, 192–193
pathogenesis of, 192–193
symptoms of, 193
treatment of, 193
with glucocorticoids, 193
Psoriasis, 164–169
animal models of, 166
cellular features of, 164–165, 165f
T cells and, 164–165
genomics and, 166–167
interleukins in, 167
incidence rates, 164
pathogenesis of, 168–169
in gene therapy, 169
in treatment therapies, 168–169
treatment for, 168–169
pathogenesis and, 168–169
PSS. See Progressive systemic sclerosis
Radioallergosorbent test (RAST), 156
Radioimmunassays, 23, 24f
Rapidly progressive glomerulonephritis (RPGN), 323–325
types of, 323–325
RAS. See Radiallergosorbent test
Raynaud’s phenomenon, 190
Renal disease, 313–329
APSGN, 326–328
antigens in, 326–327
biopsy staining for, 327f
immune response sequences in, 319f
SPED and, 327
Rapidly progressive glomerulonephritis (RPGN), 323–325
types of, 323–325
RAS. See Radiallergosorbent test
Raynaud’s phenomenon, 190
Renal disease, 313–329
APSGN, 326–328
antigens in, 326–327
biopsy staining for, 327f
immune response sequences in, 319f
SPED and, 327
streptokinase and, 327
DTH, 318–319
FSGS, 321–322
diagnosis of, 321–322
primary, 322
race/genetic factors for, 321
secondary, 321
IgA nephropathy, 319
diagnosis of, 319
race as factor in, 320
lupus nephritis, 325–326
classification of, 325–326
treatment of, 326
MCD, 320–321
incidence rates for, 319–320
treatment for, 321
membranous nephropathy, 322
mixed cryoglobulinemia, 328–329
MPGN, 323
classification of, 323
treatment of, 323
RPGN, 323–325
types of, 323–325
Respiratory tract, 231
Respiratory tract, allergic diseases of, 152–156
allergic asthma, 154–156
causes of, 154–155
experimental models of, 155–156
immunology of, 155
treatment of, 155
allergic rhinitis, 152–154
disease states of, 153
experimental model of, 153–154
incidence rates of, 153
treatment of, 153
Rheumatic diseases, from autoimmunity, 175–197.
See also Progressive systemic sclerosis; Rheumatoid arthritis; Systemic lupus erythematosus
AS, 194–196
animal models of, 196
clinical features of, 195
epidemiology of, 194
etiology of, 194–195
pathogenesis of, 194–195
symptoms of, 195
treatment of, 195–196
animal models of, 175–177
congenic, 177
inducible, 176
knockout, 176–177
spontaneous, 175–176
transgenic, 176–177
clinical features of, 178–179
future research applications for, 196–197
PM, 192–194
animal models of, 193–194
clinical features of, 193
EAM and, 193–194
epidemiology of, 192
etiology of, 192–193
pathogenesis of, 192–193
symptoms of, 193
treatment of, 193
polymyositis, 192–194
PSS, 189–192
animal models of, 192
clinical features of, 190–191
epidemiology of, 189–190
etiology of, 190
pathogenesis of, 190
Raynaud’s phenomenon and, 190
treatment of, 191–192
RA, 105–106, 177–182
animal models of, 179–182
CIA and, 105, 179–180
clinical features of, 178–179
epidemiology of, 177
etiology of, 177
incidence rates for, 177
K/BxN model for, 105–106, 181–182
pathology of, 177–182
symptoms of, 178
treatment of, 179
with NSAIDs, 179
TTP deficiency and, 105
RIP mice (animal model), 280
RPGN. See Rapidly progressive glomerulonephritis
SCID. See Severe combined immunodeficiency
Seasonal allergic conjunctivitis, 150
Selectins, 10
Severe combined immunodeficiency (SCID), 70–74
classification of, 71–73, 71t
clinical features of, 71
incidence rates for, 70
Ommen’s syndrome, 72
treatment of, 73–74
with gene therapy, 73–74
with HSCT, 73
Signaling, for TLR, 48–49
Simian immunodeficiency virus (SIV), 131, 134
SIV. See Simian immunodeficiency virus
Sjögren’s syndrome (SS), 187–189
animal models of, 189
clinical features of, 188
extraglandular, 188
epidemiology of, 187
etiology of, 188
neurological disease and, 188
pathogenesis of, 188
primary, 187
secondary, 187
symptoms of, 187
Skin. See also Skin diseases, allergic reactions
lab testing for compatibility in, 333–334
with antibody screening, 334
with blood typing, 333–334
with cross matching, 334
with HLA typing, 333
MHC and, 332–333
organ allograft rejection in, 334–337
acute, 335
induction agents for, 335–336
management/prevention of, 335–337
of specific organs, 337–338
supportive care for, 344
Tristetraproline (TTP) deficiency, 105
Trypanosoma cruzi, 211–221. See also Chagas’ disease
antigens for, 219
TTP deficiency. See Tristetraproline deficiency
Tuberculosis (TB), 231–248
AIDS and, 233
clinical, 234–236
latent, 235–236
primary, 234–235
epidemiology of, 232–233
experimental studies of, 236–242
in animal models, 236–237
host-pathogen interactions in, 237–242
extracellular persistence in vivo, 241–242
human clinical trials for, 247–248
immunity during infection of, 241
immunodeficiency syndromes for predisposition to, 232/ incidence rates for, 232
macrophages and, 238–241
effector mechanisms of, 239–241
protective immune response to, 237–238, 238/
vaccination strategies for, 242–247
animal models of, 246–247
with BCG, 242–243
with combination vaccines, 246
development framework for, 243–244
with DNA vaccines, 245–246
evaluation of, 246–247
with live vaccines, 244–245
with protein subunit vaccines, 245
worldwide impact of, 231–232
Tumor necrosis factor (TNF) antigens and, 9
cytokine immunomodulation and, 40–41
monoclonal antibodies and, 35
T cells and, 14
Type 1 diabetes (TID), animal model for, 106–107
Ulcerative colitis, 262–263
characteristics of, 262
environmental causes of, 262–263
treatment for, 263
with surgery, 263
Urticaria, 157–158
Types, 158
Vaccines, 37–38
for ARF, 208–209
acellular, 42–43
DC, 42–43
FCS and, 42
GBS and, as possible cause of, 299–300
for HBV, 266
for HIV, 139–142
cellular, 141–142
inactivated, 141
live attenuated, 140–141
protein subunit, 141
for HPV, 38
killed, 38
live attenuated, 38
for TB, 242–247
animal models of, 246–247
with BCG, 242–243
combination, 246
development framework for, 243–244
with DNA, 245–246
evaluation of, 246–247
with live vaccines, 244–245
with protein subunit vaccines, 245
VCA. See Viral capsid antigen
Vernal allergic conjunctivitis, 150–151
Viral capsid antigen (VCA), 53
Viral infections, 53–56. See also Epstein-Barr virus; Human immunodeficiency virus
EBV, 53–55
antibody response to, 53
Burkitt’s lymphoma and, 54
immunosuppressive therapy for, 54
as lymphoma, transformation of, 55/
lymphoproliferative syndrome and, 54
viral bystander damage for, 55–56
HAV, 268
HBV, 265–266
incidence rates for, 265
stages of, 265
vaccines for, 266
HCV, 266–268
biopsy for, 268
incidence rates for, 266–267
pathology of, 267
symptoms of, 267
treatment for, 268
HDV, 268
herpes simplex, 87–88
HAV, 54, 56, 131–142
animal models of, 138–139
future research for, 142
genome of, 140
infection course of, 133/
infection demographics for, 131
maternal-infant models for, 135–136
progression patterns for, 131, 134–138
TB and, 233
types of, 139–140
vaccines for, 139–142
vaginal transmission of, 132/ Vitamin B12, 237
von Pirquet, Clemens, 317
WASP. See Wiskott-Aldrich syndrome protein
WHIM syndrome, 88
WHO. See World Health Organization
Wiskott-Aldrich syndrome, 79
WASP for, 79
Wiskott-Aldrich syndrome protein (WASP), 79
World Health Organization (WHO), 232
X-linked agammaglobulinemia, 66
X-linked lymphoproliferative syndrome (XLP), 82–83
XLP. See X-linked lymphoproliferative syndrome