

Contents

General Introduction	xi
Objectives	1
Introduction	3
PART I Immunology	5
Introduction to Immunology	7
Glossary	7
Abbreviations	8
1 Basic Concepts in Immunology	9
Definitions	9
Adaptive Immune Response	9
Innate Immune Response	10
Similarities Between Adaptive and Innate Immune Responses	10
Differences Between Adaptive and Innate Immune Responses	11
Immunity Versus Inflammation	12
Components of the Immune System	13
Leukocytes	13
Lymphoid Tissues	16
2 Immunization and Adaptive Immunity:	
The Immune Response Arc	17
Overview of the Immune Response Arc	17
Phases of the Immune Response Arc	19
Afferent Phase	19
Processing Phase	22
Effector Phase	24
Immune Response Arc and Primary or Secondary Immune Response	26
Concept of Immunologic Memory	26
Regional Immunity and Immunologic Microenvironments	27
Regional Immunity	27
Immunologic Microenvironments	28
Clinical Examples of the Concept of the Immune Response Arc	28
3 Ocular Immune Responses	31
Immune Responses of the Conjunctiva	31
Features of the Immunologic Microenvironment	31
Immunoregulatory Systems	33



Immune Responses of the Anterior Chamber, Anterior Uvea, and Vitreous	34
Features of the Immunologic Microenvironment	34
Immunoregulatory Systems	35
Immune Responses of the Cornea	38
Features of the Immunologic Microenvironment	38
Immunoregulatory Systems	38
Immune Responses of the Retina, RPE, Choriocapillaris, and Choroid	40
Features of the Immunologic Microenvironment	40
Immunoregulatory Systems	40
4 Mechanisms of Immune Effector Reactivity	43
Effector Reactivities of Innate Immunity	43
Bacteria-Derived Molecules That Trigger Innate Immunity	43
Other Triggers or Modulators of Innate Immunity	46
Innate Mechanisms for the Recruitment and Activation of Neutrophils	48
Innate Mechanisms for the Recruitment and Activation of Macrophages	50
Effector Reactivities of Adaptive Immunity	54
Antibody-Mediated Immune Effector Responses	55
Lymphocyte-Mediated Effector Responses	64
Combined Antibody and Cellular Effector Mechanisms	71
Mediator Systems That Amplify Innate and Adaptive Immune Responses	74
Plasma-Derived Enzyme Systems	74
Vasoactive Amines	76
Lipid Mediators	77
Cytokines	80
Reactive Oxygen Intermediates	80
Reactive Nitrogen Products	84
Neutrophil-Derived Granule Products	85
5 Special Topics in Ocular Immunology	87
Immunoregulation of the Adaptive Immune Response	87
T- and B-Lymphocyte Antigen Receptor Repertoire	87
Tolerance and Immunoregulation	87
Molecular Mimicry	90
HLA Associations and Disease.	91
Normal Function of HLA Molecules	91
Allelic Variation	91
MHC and Transplantation.	93
Disease Associations.	94
Immunotherapeutics	95
Nonsteroidal Anti-Inflammatory Drugs	95
Glucocorticosteroids.	96
Immunomodulatory Therapy.	96

PART II	Intraocular Inflammation and Uveitis	99
6	Clinical Approach to Uveitis	101
	Classification of Uveitis	102
	Anterior Uveitis	103
	Intermediate Uveitis	104
	Posterior Uveitis	104
	Panuveitis	108
	Symptoms of Uveitis	108
	Signs of Uveitis	109
	Anterior Segment	110
	Intermediate Segment	113
	Posterior Segment	114
	Review of the Patient's Health and Other Associated Factors	114
	Differential Diagnosis of Uveitic Entities	116
	Epidemiology of Uveitis	116
	Laboratory and Medical Evaluation	117
	Therapy	121
	Medical Management of Uveitis	121
	Mydriatic and Cycloplegic Agents	121
	NSAIDs	122
	Corticosteroids	123
	Immunomodulatory Agents	128
	Surgical Management of Uveitis	137
	Aqueous Paracentesis	137
	Pars Plana Vitrectomy	138
	Chorioretinal Biopsy	139
7	Noninfectious (Autoimmune) Uveitis	147
	Anterior Uveitis	147
	Acute Nongranulomatous Iritis and Iridocyclitis	147
	Chronic Anterior Uveitis (Iridocyclitis)	159
	Intermediate Uveitis	166
	Pars Planitis	167
	Multiple Sclerosis	172
	Posterior Uveitis	172
	Collagen Vascular Diseases	173
	Inflammatory Chorioretinopathies of Unknown Etiology	179
	Panuveitis	199
	Sarcoidosis	199
	Sympathetic Ophthalmia	204
	Vogt-Koyanagi-Harada Disease	209
	Adamantiades-Behçet Disease	215

8 Infectious Uveitis	223
Viral Uveitis	223
Herpesviridae Family (HSV, VZV, CMV, and EBV)	223
Rubella	235
Lymphocytic Choriomeningitis Virus	237
Measles (Rubeola)	238
West Nile Virus	240
Other Viral Diseases	242
Fungal Uveitis	243
Ocular Histoplasmosis Syndrome	243
Candidiasis	248
Aspergillosis	250
Cryptococcosis	251
Coccidioidomycosis	252
Protozoal Uveitis	254
Toxoplasmosis	254
Helminthic Uveitis	262
Toxocariasis	262
Cysticercosis	264
Diffuse Unilateral Subacute Neuroretinitis	266
Onchocerciasis	268
Bacterial Uveitis	270
Syphilis	270
Lyme Disease	277
Leptospirosis	281
Ocular Nocardiosis	283
Tuberculosis	283
Ocular Bartonellosis	289
Whipple Disease	292
9 Endophthalmitis	293
Signs and Symptoms	293
Types of Infectious Endophthalmitis	293
Postoperative Endophthalmitis	295
Posttraumatic Endophthalmitis	299
Endophthalmitis Associated With Filtering Blebs	299
Endogenous Endophthalmitis	300
Prophylaxis	304
Diagnosis	306
Differential Diagnosis	306
Obtaining Intraocular Specimens	306
Cultures and Laboratory Evaluation of Intraocular Specimens	307
Treatment	307
Surgical Management of Acute Postoperative Endophthalmitis	307
Medical Management of Acute Postoperative Endophthalmitis	307
Other Considerations for Treatment of Endophthalmitis	309
Outcomes of Treatment	309

10	Masquerade Syndromes	311
	Nonneoplastic Masquerade Syndromes	311
	Retinitis Pigmentosa	311
	Ocular Ischemic Syndrome	311
	Chronic Peripheral Rhegmatogenous Retinal Detachment	312
	Intraocular Foreign Body	313
	Pigment Dispersion Syndrome	313
	Other Syndromes	313
	Neoplastic Masquerade Syndromes	313
	Primary Central Nervous System Lymphoma	314
	Neoplastic Masquerade Syndromes Secondary to Systemic Lymphoma	317
	Neoplastic Masquerade Syndromes Secondary to Leukemia	318
	Neoplastic Masquerade Syndromes Secondary to Uveal Lymphoid Proliferations	318
	Nonlymphoid Malignancies	318
	Metastatic Tumors	319
	Bilateral Diffuse Uveal Melanocytic Proliferation	320
11	Complications of Uveitis	321
	Calcific Band-Shaped Keratopathy	321
	Cataracts	321
	Juvenile Rheumatoid Arthritis/Juvenile Idiopathic Arthritis-associated Uveitis	322
	Other Uveitis Entities	322
	Combined Phacoemulsification and Pars Plana Vitrectomy	323
	Glaucoma	325
	Uveitic Ocular Hypertension	326
	Uveitic Glaucoma	326
	Hypotony	330
	Cystoid Macular Edema	330
	Vitreous Opacification and Vitritis	332
	Retinal Detachment	332
	Retinal and Choroidal Neovascularization	333
12	Ocular Involvement in AIDS	335
	Virology of HIV	335
	Pathogenesis	336
	Natural History	337
	Transmission	337
	Diagnosis	339
	Management of HIV Infection	340
	Systemic Conditions	340
	Medical Therapy	340
	Ophthalmic Complications	341
	External Eye Manifestations	353
	The Ophthalmologist's Role	355

Precautions in the Health Care Setting	356
Precautions in Ophthalmic Practice	356
Basic Texts	359
Related Academy Materials	361
Credit Reporting Form	363
Study Questions	367
Answers	377
Index	387