

CONTENTS

<i>Foreword</i>	ix
<i>Acknowledgments</i>	xi
1. Introduction—Common Features About Cytokines	1
Division	3
Structure	3
Receptors	6
Intracellular Signal Transduction	8
Hormones and Cytokines	11
Function	14
2. The Immune System—Definition and Development of Immunity	17
Organization of the Immune System	19
Humoral Innate (Nonspecific) Immunity	25
Cellular Innate (Nonspecific) Immunity	30
Adaptive Humoral (Specific) Immune System	39
Cellular Adaptive (Specific) Immune System	42
3. Activation of Cells of the Immune System	57
Activation of Immune Cells in the Periphery of the Immune System	57
Specific Recognition	58
Coreceptors of T Cells: CD4 and CD8	70
Costimulation during T-Cell Activation	71
Signal Transduction in T Cell	72
Signal Transduction in the B Cell	80
Signal Transduction in Mast Cells	81
Further Development of Immune Cells Upon Activation	83
T Lymphocyte Homeostasis	93
Repertoire and Tolerance	94
4. The Role and Regulation of the Immune Responses	99
The Course of the Immune Response	99
Regulation of Immunocyte Development after Activation	105
Important Control Functions of Cytokines	106
The Role of Th1-Type of Immune Response	114
The Role of Th2-Type of Immune Response	115
The Role of Th9 Subset	116

The Role of Th17 Subset	116
The Role of Th22 Subset	118
The Role of Th3, and Tr1 Cells	119
The Role of Regulatory CD4 T Lymphocytes—Tregs	119
The Role of the Tfh Subset	121
5. Cytokines of the Immune System: Interferons	123
Interferon- α/β	124
Interferon- γ (IFN- γ)	129
Interferon- λ (IFN- λ)	140
References	140
Further Reading	142
6. Cytokines of the Immune System: Interleukins	143
IL-1	143
IL-2	151
IL-3	160
IL-4	162
IL-5	166
IL-6	168
IL-7	175
IL-8	178
IL-9	179
IL-10	181
IL-11	184
IL-12	186
IL-13	190
IL-14 (IL-14 Does Not Exist in Databases)	193
IL-15	193
IL-16	197
IL-17	200
IL-18	202
IL-19	205
IL-20	207
IL-21	209
IL-22	212
IL-23	214
IL-24	216
IL-25	218
IL-26	219
IL-27	221

IL-28 and IL-29 (Type III Interferon, λ 1–3)	224
IL-30	225
IL-31	225
IL-32	227
IL-33	228
IL-34	229
IL-35	230
IL-36	232
IL-37	233
IL-38	234
References	235
Further Reading	238
7. Cytokines of the Immune System: Chemokines	241
About Chemokines	241
The Role of Chemokines in the Immune System	246
CCL Chemokines (CCL1–CCL28)	248
CXCL Chemokines (1–16)	255
CX3CL Chemokine	259
XCL Chemokines (1–2)	260
Other Features of Chemokines	260
8. Cytokines Important for Growth and/or Development of Cells of the Immune System	263
TNF- α / β	263
TGF- β	266
TSLP (Thymic Stromal Lymphopoietin)	269
KGF (Keratinocyte Growth Factor)	271
SCF (Stem Cell Factor) and Growth Factors (CSF, GM-CSF, M-CSF) of Hematopoietic Lines	271
LIF—Leukemia Inhibitory Factor	272
CNTF—Ciliary Neurotrophic Factor	274
OSM—Oncostatin M	276
A Short Description of Other Cytokines that Regulate Growth and Development of Various Tissues	277
9. Theories about the Function of the Immune System	283
About Scientific Theories	283
Self–Nonself Discrimination	285
The “Pathogen-Associated Molecular Pattern (PAMP) Recognition” Theory (Janeway)	288

Idiotypic Networks and Suppression (Jerne)	289
The "Danger" Model (Matzinger)	291
The "Integrity" Model (Dembic)	293
Other Theories About Immunity	299
References	301
<i>Index</i>	303