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Molecular Mechanisms in Health and Disease

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Autoantibodies and Autoimmunity

Molecular Mechanisms in Health and Disease

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K. Michael Pollard
Contents

Preface XIX

List of Contributors XXI

Part 1 Introductory Chapter 1

1 Introduction 3
K. Michael Pollard
1.1 Background 3
1.2 Autoimmunity 4
1.3 Autoantibodies as Diagnostic Markers 8
1.4 Autoantibodies as Molecular and Cellular Probes 10
1.5 Autoantibodies in Experimental Models of Autoimmunity 17
1.6 Conclusions 22
References 23

2 Prefatory Chapter:
The Importance of the Autoantibody-defined Epitope 27
Eng M. Tan
2.1 Introduction 27
2.2 The Uniqueness of the Autoantibody-defined Antigenic Determinant or the Autoepitope 28
2.2.1 The Highly Conserved Nature of the Autoepitope 29
2.2.2 The Autoepitope Resides at or in Close Proximity to the Functional Region or Binding Site of the Antigen 29
2.2.3 The Autoepitope is Composed of Conformation-dependent Discontinuous Sequences of the Antigen 31
2.3 Conclusions 32
References 33
Part 2  Autoimmunity  35

3  Self/Non-self Recognition  37
   Alan G. Baxter

3.1  Introduction  37
3.2  Immunological Self  37
3.2.1  Burnet's Self-marker Hypothesis  37
3.2.2  A Confusion of Level: Adaptive Enzymes  40
3.2.3  The Boundaries of Self  43
3.2.4  Prenatal Tolerance: Testing the Model  44
3.3  The Clonal Selection Theory  46
3.3.1  Immune Theories of Natural Selection  46
3.3.2  Clonal Selection  48
3.3.3  Corollaries of the Clonal Selection Theory  51
3.4  Self Post-Burnet  52
3.4.1  The Immunologists' Dirty Little Secret  53
3.4.2  The Missing Self Hypothesis  56
3.5  Conclusions  58
   References  59

4  Central and Peripheral Tolerance  63
   Robert L. Rubin

4.1  Introduction  63
4.2  Ignorance of Lymphocytes to Target Antigen  64
4.3  Central T-cell Tolerance  65
4.3.1  Tolerance Due to Negative T-cell Selection  66
4.3.1.1  Aire-driven Peripheral Antigen Expression in Medullary Thymic
         Epithelial Cells  67
4.3.2  Self-tolerance Associated with Positive T-cell Selection  69
4.3.3  Self-tolerance Due to Thymus-derived Regulatory T Cells: Natural
         Regulatory T Cells  70
4.4  Peripheral T-cell Tolerance  71
4.4.1  Self-tolerance Due to Regulatory T Cells Generated in the Periphery:
         Adaptive Regulatory T Cells  71
4.4.2  T-cell Anergy  73
4.4.3  Activation-induced Cell Death  75
4.5  B-cell Tolerance  77
4.5.1  Negative Selection of B Cells  77
4.5.2  B-cell Receptor Editing  79
4.5.3  B-cell Anergy  80
4.6  Breaking Tolerance  81
4.7  Concluding Remarkss  81
   References  82
5 T-B Cell Interactions in Autoimmunity  85
Barbara Schraml and Stanford L. Peng

5.1 Introduction  85
5.2 Direct T-B Cell Interactions: Receptor-mediated Contacts  85
5.2.1 CD40-CD154  87
5.2.2 CD28 System  90
5.2.3 Other Costimulatory Systems  91
5.2.4 Cell death  92
5.3 Indirect T-B Cell Interactions: Soluble Mediators  92
5.3.1 Th1 versus Th2 Cytokines in Humoral Autoimmunity  92
5.3.2 IFN-γ  93
5.3.3 IL-4  95
5.3.4 IL-6  96
5.3.5 IL-10  96
5.3.6 Other Cytokines  97
5.4 The Nature of T-B Interactions in Autoimmunity:
Ongoing Issues  97
References  99

6 Cell Death and Autoimmunity  107
Carlos A. Casiano and Fabio J. Pacheco

6.1 Introduction  107
6.2 Apoptosis  108
6.2.1 Mechanistic Events in Apoptosis  109
6.3 Necrosis  111
6.3.1 Mechanistic Events in Necrosis  113
6.4 Impaired Lymphocyte Cell Death and Autoimmunity  115
6.5 Cell Death–associated Autoantigen Proteolysis
and Autoimmunity  116
6.5.1 Autoantigen Proteolysis During Apoptosis  116
6.5.2 Autoantigen Proteolysis During Granzyme B–mediated
Cytotoxicity  117
6.5.3 Autoantigen Cleavage During Necrosis  118
6.5.4 Topo I, a Model to Study Mechanisms of Cathepsin-mediated
Autoantigen Cleavage During Necrosis  120
6.6 Defective Clearance of Apoptotic Cells and Autoimmunity  123
6.7 Immunostimulatory Properties of Dying Cells  124
6.8 Conclusions  126
References  128
7 Self-antigen Modification and Autoimmunity 139
Stuart M. Levine, Livia Casciola-Rosen, and Antony Rosen

7.1 Introduction 139
7.2 Learning to Ignore the “Self”: Immunologic Dominance and Crypticity 140
7.3 Proteolytic Cleavage of Autoantigens During Apoptosis 143
7.4 Cytotoxic Lymphocyte Granule–induced Death Pathways 145
7.5 Many Autoantigens Are Specifically Cleaved by GrB, Generating Fragments Not Observed During Other Forms of Cell Death 147
7.6 Grb-induced Cleavage of Tissue-specific Autoantigens 149
7.7 Novel Conformation of Phenotype-specific Autoantigens 150
7.8 Conclusion: A Model of Antigen Selection During Cell Death 150

References 151

Part 3 Autoantibodies as Diagnostic Markers 157

8 Detection of Autoantibodies 159
Rufus W. Burlingame and Carol Peebles

8.1 Comparison of Common Techniques 159
8.2 Comparison of Common Tests 164
8.3 Comparison of Antigens, Conjugates, and Cutoff Values 172
8.4 Comparison of Multiplexed Assays 174

References 184

9 Synthetic Peptides for the Analysis of B-cell Epitopes in Autoantigens 189
Jean-Paul Briand and Sylviane Muller

9.1 Introduction 189
9.2 Autoantibodies as Diagnostic Markers 190
9.3 Synthetic Peptides 191
9.3.1 Multiple Peptide Synthesis on Classical Resin Supports 192
9.3.1.1 Resin Supports 192
9.3.1.2 Devices 194
9.3.2 Multiple Peptide Synthesis on Specific Matrices 194
9.3.2.1 Polyethylene Supports for the Multi-pin Synthesis Technology 195
9.3.2.2 Cellulose Paper for SPOT Synthesis 195
9.3.3 The Quality of Peptides 196
9.3.4 Branched Peptides or Peptide Dendrimers 198
9.3.4.1 The MAP System 198
9.3.4.2 The TASP Construct 199
9.3.4.3 The SOCn Construct 200
9.3.4.4 Synthesis of Dendrimers 200
9.4 Peptide-based Methods for Detection and Quantification of Autoantibodies 200
9.4.1 ELISA Using Synthetic Peptides 201
9.4.2 The PEPscan Technique 204
9.4.3 The SPOTscan Technique 204
9.4.4 Biosensors 205
9.4.5 Autoantigen Microarray Technologies 205
9.4.6 Emerging Technologies for Biomarker Identification With Peptides 206
9.5 Multiple Peptide Presentation 207
9.6 Peptides Containing Natural Modifications and Structural Motifs 208
9.7 Peptides Containing Non-natural Modifications 209
9.8 Mimotopes 209
9.9 Cross-reactivity of Autoantibodies With Synthetic Peptides and the Cognate Protein 211
9.10 Selected Examples of Epitope Mapping With Synthetic Peptides 212
9.11 Concluding Remarks 215

References 217

10 Autoantibodies and Systemic Autoimmune Diseases 225
Karsten Conrad and Michael Bachmann

10.1 Characteristics and Classification of Systemic Autoimmune Diseases 225
10.2 Distinguishing Features of Systemic Autoimmune Disease-Specific Autoantibodies 226
10.2.1 Heterogeneity of the Autoimmune Response 226
10.2.2 Racial/Ethnic Variations in Frequency, Epitope Recognition, and Clinical Relevance of Disease-related Autoantibodies 227
10.2.3 Autoantibodies as Predictors (Early Markers) of Disease 228
10.2.4 Problems of Standardization of AAB Testing 229
10.3 Autoantibodies as Diagnostic and/or Prognostic Markers in Systemic Autoimmune Diseases 230
10.3.1 Autoantibodies in Rheumatoid Arthritis 230
10.3.2 Autoantibodies in Systemic Lupus Erythematosus 231
10.3.3 Autoantibodies in Sjögren's Syndrome 231
10.3.4 Autoantibodies in Systemic Sclerosis (Scleroderma) 231
10.3.4.1 Characteristics, Heterogeneity, and Subsets of Systemic Sclerosis 231
10.3.4.2 Anti-centromere Antibodies 233
10.3.4.3 Anti-topoisomerase I Antibodies 234
10.3.4.4 Anti-nucleolar and Anti-RNA Polymerase Antibodies 234
10.3.5 Autoantibodies in Idiopathic Inflammatory Myopathies 235
13 Autoantibodies and Organ-specific Autoimmunity 291
H. Bantel, J. Kneser, and M.P. Manns

13.1 Role of Autoantibodies in Tissue-specific Organ Damage 291
13.2 Autoantibodies and Autoantigens in Autoimmune Hepatitis 292
13.3 Autoantibodies Frequently Associated with Autoimmune Hepatitis Type 1 292
13.3.1 Antinuclear Antibodies 293
13.3.2 Anti-Smooth Muscle Antibodies 293
13.3.3 Perinuclear Anti-neutrophil Cytoplasmic Antibodies (pANCAs) and Antibodies to Asialoglycoprotein Receptor (anti-ASGPRs) 294
13.4 Autoantibodies and Autoantigens Associated with Autoimmune Hepatitis Type 2 294
13.4.1 Liver Kidney Microsomal Antibodies 295
13.4.2 Anti-cytosol Autoantibodies Type 1 (anti-LC-1) 295
13.5 Autoantibodies and Autoantigens Associated with Autoimmune Hepatitis Type 3 296
13.6 Autoantibodies Associated with Primary Biliary Cirrhosis 296
13.7 Autoantibodies in Overlap Syndrome Between Autoimmune Hepatitis and Primary Biliary Cirrhosis 297
13.8 Discussion and Conclusions 297
References 299

14 Autoantibodies in Autoimmune Thyroid Disease 303
Osvaldo Martinez and Bellur S. Prabhakar

14.1 The Thyroid Gland 303
14.2 Autoimmune Diseases of the Thyroid 303
14.3 Autoantibodies in Thyroiditis 305
14.4 TSHR-mediated Autoimmunity 306
14.5 Development of Autoantibodies Against TSHR 306
14.6 The Role of Genetic Factors 307
14.7 The Role of Environmental Factors 308
14.8 Assays for TSHR Autoantibodies 309
14.9 Thyrotropin Receptor Down-modulation 310
14.10 Functional Domains of TSHR 311
14.11 TSAb Epitopes in GD 312
14.12 TSBAbs with TBII Activity 314
14.13 The Heterogeneous and Homogeneous TSAbs 315
14.14 Immunomodulation 315
14.15 Conclusions 317
References 318
15Autoantibodies in Diabetes 321
Sarah M. Weenink and Michael R. Christie

15.1 Introduction 321
15.2 Islet-cell Antigens 324
15.2.1 Insulin as an Autoantigen 324
15.2.2 Glutamic Acid Decarboxylase 327
15.2.3 IA-2 (ICA512) and Phogrin (IA-2) 329
15.2.4 Other Target Antigens 331
15.3 Islet Autoantibodies and the Prediction of Type 1 Diabetes 332
15.3.1 Antibody Detection and Standardization 332
15.3.2 Development of Islet Autoantibodies in Early Life 333
15.3.3 Distribution of Antibodies in Diabetic Patients at Time of Disease Diagnosis 335
15.3.4 Islet Autoantibodies and Diabetes Prediction 337
15.4 Relationship of Islet Autoantibodies to T-cell Responses in Type 1 Diabetes 339
15.5 Conclusions 342

References 343

Part 4 Autoantibodies as Molecular and Cellular Probes 351

16 Autoantibody Recognition of Cellular and Subcellular Organelles 353
Ivan Raška and Šárka Ružičková

16.1 Introduction 353
16.2 Autoantibodies Are Important in Clinical and Basic Research 354
16.3 Epitopes Recognized by Autoantibodies 356
16.4 Immunocytochemistry and Autoantibodies 360
16.5 Autoantibodies as Probes for Cytoplasmic Antigens 364
16.6 Autoantibodies as Probes for Nuclear Antigens 366
16.7 Conclusions 371

References 375

17 Autoantibody Recognition of Macromolecular Structures and Their Subunits 379
Erica A. Champion and Susan J. Baserga

17.1 Autoantibodies Used to Probe the Function of Macromolecular Structures 379
17.2 Autoantibodies as Probes for the Mechanism of Pre-mRNA Splicing 382
17.2.1 Patients with Systemic Lupus Erythematosus (SLE) Make Antibodies to snRNPs 382
17.2.2 Are snRNPs Involved in Splicing? 384
17.2.3 A Useful Tool: Anti-Sm Monoclonal Antibodies Derived from an SLE Mouse Model 385
17.2.4 Autoantibodies Are Used to Test Whether snRNPs Are Involved in Pre-mRNA Splicing 385
17.2.5 The Protein Components of snRNPs 386
17.2.6 Subcellular Localization of Splicing Components 387
17.2.7 Specific Autoantibodies to Each Spliceosomal snRNP 387
17.2.8 SLE Led the Way to Our Current Understanding of the Mechanism of Pre-mRNA Splicing 388
17.3 U3 and the Box C/D Small Nucleolar RNAs (snoRNAs) 389
17.3.1 The U3 snoRNA in Ribosome Biogenesis 389
17.3.2 Fibrillarin Is the First U3-associated Protein 390
17.3.3 Fibrillarin Autoantibodies Uncover a New Class of snoRNAs 395
17.4 The La and Ro Autoantigens 396
17.4.1 Ro and La Are Related Autoantigens 396
17.4.2 The La snRNPs 397
17.4.3 The Ro scRNPs 398
17.5 RNase P and RNase MRP 398
17.5.1 RNase P and RNase MRP Are Structurally Related 398
17.5.2 A New Function of RNase MRP 400
17.5.3 The Structure and Architecture of RNase P and RNase MRP 400
17.5.4 Current and Future Uses for Autoantibodies in the Study of RNase P and RNase MRP 401
17.6 The Exosome 403
17.6.1 A Molecular Marker for Polymyositis-Scleroderma Overlap Syndrome 403
17.6.2 The Exosome Is a Conserved Complex 404
17.6.3 Autoantibody Targets in the Human Exosome 405
17.7 NOR-90/hUBF and RNA Polymerases I, II, and III 405
17.7.1 RNA Polymerases I, II, and III 405
17.7.2 The Nucleolar-organizing Region 407
References 408

18 Autoantibodies and the Cloning and Characterization of Cellular Constituents 419
Edward K. L. Chan

18.1 Introduction 419
18.2 cDNA Expression Cloning as a Tool to Identify Autoantigens 420
18.2.1 Selection of Screening Sera Is Critical to Successful Cloning 423
18.2.2 Selection of cDNA Libraries Is Another Critical Factor of Successful Cloning 424
18.2.3 Useful Controls in Expression Cloning 425
18.2.4 Methods in Verification of Candidates in Expression Cloning 426
18.2.5 Further Characterization of cDNA Clones 427
18.3 Autoantibodies to IGF-II mRNA-binding Protein p62 and Overexpression of p62 in Human Hepatocellular Carcinoma 429
18.3.1 Cloning of IGF-II mRNA-binding Autoantigen p62 in HCC 429
18.3.2 Humoral Response to p62 During Transition from Chronic Liver Disease to HCC 431
18.3.3 Autoantibodies to p62 and Koc Are Widely Present in HCC and Other Cancers 431
18.3.4 Aberrant Expression of p62 in HCC 433
18.4 Unique Features of Golgi Complex Autoantigens 434
18.4.1 Cloning of Golgi Autoantigens (Golgins) 434
18.4.2 Prevalence of Human AGA 435
18.4.3 Mechanism of AGA Production and Relation to Other Large Coiled-coil Protein Autoantigens 436
18.4.4 Modification of Golgi Autoantigens During Cell Death 438
18.5 Cloning of GW182 Autoantigen and Identification of GW Bodies 439
18.5.1 GW Bodies Are Distinct Cytoplasmic Foci 439
18.5.2 GWBs Are Foci for mRNA Storage and Degradation 440
18.5.3 GW182 and Sjögren's Syndrome 441
18.6 Future Perspectives 442
References 443

19 Tolerance and Immunity to the Ro/La RNP Complex 447
Catherine L. Keech, Tom P. Gordon, and James McCluskey
19.1 Introduction 447
19.2 The Nature of the Autoimmune Response to La 447
19.3 The Ro/La Ribonucleoprotein Complex 448
19.4 Autoimmune Findings in Humans 449
19.5 Autoimmunity to La in Experimental Models 453
19.6 Tolerance to Nuclear Antigens 457
19.7 Lack of Tolerance in the B-cell Compartment 458
19.8 Tolerance in the T-cell Compartment 460
19.9 Induction of Disease 464
19.10 Anti-La Autoantibodies Are Pathogenic in the Neonatal Lupus Syndrome 466
19.11 Concluding Remarks 467
References 468

20 Autoantibody Recognition of Functional Sites 473
Carlo Selmi, Sabine Oertelt, Pietro Invernizzi, Mauro Podda, and M. Eric Gershwin
20.1 Introduction 473
20.2 Anti-mitochondrial Antibodies in Primary Biliary Cirrhosis 474
20.2.1 Biochemistry of the 2-Oxoacid Dehydrogenase Complex 475
20.2.2 Epitopes in Biliary Epithelia  477
20.3 Enzyme Inhibition  481
20.4 Xenobiotics and AMA  482
20.5 Microorganisms and AMAs  483
20.6 AMAs in the Pathogenesis of PBC  485
20.7 Other Autoantibodies in PBC  486
20.8 Concluding Remarks and Future Directions  486

References  487

Part 5 Autoantibodies in Experimental Models of Autoimmunity  493

21 Novel Mechanisms of Autoantibody Induction and Pathogenesis in Experimental Autoimmunity  495
Yulius Y. Setiady and Kenneth S.K. Tung

21.1 Introduction  495
21.2 The Autoimmune Ovarian Disease (AOD) Models  496
21.2.1 The ZP3 Model  496
21.2.2 The Day-3 Thymectomy AOD Model  497
21.2.3 The Neonatal AOD Model  497
21.3 Mechanism of Induction and Antigen Specificity of Autoantibodies  498
21.3.1 T-cell Peptide of a Self-protein Elicits Autoantibodies to Distant Sites of the Protein Antigen  498
21.3.2 Mechanism of the Amplified Autoantibody Response  500
21.3.3 Amplified Autoantibody Response Also Occurs in Response to a Foreign T-cell Epitope That Mimics a Self T-cell Epitope  501
21.3.4 Autoantibody Production in AOD of Day-3 Thymectomized Mice Is Suppressed by the CD4+CD25+ T Cells from Normal Mice  502
21.4 Pathogenic Mechanisms of Autoantibodies in Autoimmune Disease  503
21.4.1 Studying Autoantibody Response Without Concomitant Autoreactive T-cell Response Based on Chimeric Peptide  503
21.4.2 ZP Antibodies Cause Organ Failure by Retargeting T Cell–induced Inflammation to the Functional Target  504
21.4.3 Autoantibodies that are Non-pathogenic in Adults can be Pathogenic in Neonatal Mice (nAOD)  505
21.4.4 Mechanism of nAOD I: Autoantibody Induction of de novo Neonatal Pathogenic T-cell Response by Formation of the Autoantigen-Antibody Complex  508
21.4.5 Mechanism of nAOD II: Disease Induction Is Influenced by the B-cell Epitope Specificity of the Autoantibody  509
21.4.6 Mechanism of nAOD III: Neonatal Time Window of Disease Susceptibility That Is Partially Influenced by the CD4+CD25+ Regulatory T Cells  510
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.4.7</td>
<td>Mechanism of nAOD IV: Requirement of NK Cells, FcR, and Proinflammatory Cytokines in Disease Pathogenesis</td>
<td>510</td>
</tr>
<tr>
<td></td>
<td><strong>References</strong></td>
<td>513</td>
</tr>
<tr>
<td>22</td>
<td><strong>Environmental Factors That Contribute to Autoimmunity</strong></td>
<td>519</td>
</tr>
<tr>
<td></td>
<td><em>Per Hultman</em></td>
<td></td>
</tr>
<tr>
<td>22.1</td>
<td>Relation Between Genetic and Environmental Factors in Autoimmunity</td>
<td>519</td>
</tr>
<tr>
<td>22.2</td>
<td>Environmental Factors in Autoimmunity</td>
<td>520</td>
</tr>
<tr>
<td>22.3</td>
<td>Xenobiotics</td>
<td>520</td>
</tr>
<tr>
<td>22.3.1</td>
<td>Drug-related Autoimmune Diseases/Syndromes</td>
<td>520</td>
</tr>
<tr>
<td>22.3.2</td>
<td>Biological Agents</td>
<td>521</td>
</tr>
<tr>
<td>22.3.3</td>
<td>Environmental Agents</td>
<td>522</td>
</tr>
<tr>
<td>22.3.3.1</td>
<td>Chemicals</td>
<td>522</td>
</tr>
<tr>
<td>22.3.3.2</td>
<td>Metals</td>
<td>523</td>
</tr>
<tr>
<td>22.3.3.3</td>
<td>Primarily Dietary Factors</td>
<td>524</td>
</tr>
<tr>
<td>22.3.3.4</td>
<td>Ultraviolet Radiation</td>
<td>524</td>
</tr>
<tr>
<td>22.4</td>
<td>Microbial Agents in Autoimmunity</td>
<td>525</td>
</tr>
<tr>
<td>22.5</td>
<td>Hormones in Autoimmunity</td>
<td>526</td>
</tr>
<tr>
<td>22.6</td>
<td>Prenatal Exposure and Postnatal Autoimmune Effects</td>
<td>527</td>
</tr>
<tr>
<td>22.7</td>
<td>Acceleration and Aggravation of Autoimmunity by Environmental Agents</td>
<td>528</td>
</tr>
<tr>
<td>22.7.1</td>
<td>Acceleration of Spontaneous Autoimmune Diseases by Hg</td>
<td>528</td>
</tr>
<tr>
<td>22.7.2</td>
<td>Acceleration of Spontaneous Autoimmune Diseases by Cadmium and Lead</td>
<td>529</td>
</tr>
<tr>
<td>22.8</td>
<td>Comments on the Accelerating Effect of Metals on Autoimmunity</td>
<td>529</td>
</tr>
<tr>
<td>22.8.1</td>
<td>Mechanisms for Induction of Autoimmunity by Environmental Agents</td>
<td>530</td>
</tr>
<tr>
<td>22.8.2</td>
<td>Lessons from Procainamide and Hydralazine</td>
<td>530</td>
</tr>
<tr>
<td>22.8.3</td>
<td>Lessons from Metal-induced Autoimmunity</td>
<td>531</td>
</tr>
<tr>
<td>22.9</td>
<td>Concluding Remarks</td>
<td>533</td>
</tr>
<tr>
<td></td>
<td><strong>References</strong></td>
<td>533</td>
</tr>
<tr>
<td>23</td>
<td><strong>Genetics of Autoantibody Production in Mouse Models of Lupus</strong></td>
<td>543</td>
</tr>
<tr>
<td></td>
<td><em>Dwight H. Kono and Argyrios N. Theofilopoulos</em></td>
<td></td>
</tr>
<tr>
<td>23.1</td>
<td>Introduction</td>
<td>543</td>
</tr>
<tr>
<td>23.2</td>
<td>Identifying Genes Predisposing to Systemic Autoimmunity</td>
<td>544</td>
</tr>
<tr>
<td>23.3</td>
<td>Mouse Models of SLE in Mapping Studies</td>
<td>545</td>
</tr>
<tr>
<td>23.4</td>
<td>Lupus Quantitative Trait Loci</td>
<td>546</td>
</tr>
<tr>
<td>23.5</td>
<td>Loci in NZB, NZW, and NZB×NZW Recombinant Inbred Mice</td>
<td>547</td>
</tr>
<tr>
<td>23.6</td>
<td>Loci Identified in Crosses of MRL-Fas&lt;sup&gt;+/+&lt;/sup&gt;Mice</td>
<td>551</td>
</tr>
<tr>
<td>23.7</td>
<td>Loci in BXSB Crosses</td>
<td>555</td>
</tr>
<tr>
<td>23.8</td>
<td>Loci in Other Spontaneous Lupus Crosses</td>
<td>556</td>
</tr>
</tbody>
</table>
23.9 Loci Identified in Induced or Mutant Models of Lupus 557
23.10 Conclusions 558
References 559

24 Genetic Manipulation 563
Matthew C. Pickering and Marina Botto

24.1 Introduction 563
24.2 Genetic Pathways Leading to Autoimmunity: Lessons from Genetically Manipulated Models 564
24.2.1 Dysregulation of the Immune Response 564
24.2.2 Perturbations in Lymphocyte Homeostasis 567
24.2.3 Defects in the Scavenging Mechanisms 568
24.2.3.1 Introduction 568
24.2.3.2 Mechanisms of Apoptotic Cell Clearance 569
24.2.3.3 Apoptotic Cells: A Potential Source of Lupus Autoantigens 570
24.2.3.4 Complement Deficiency and SLE 571
24.2.3.5 Complement Promotes the Clearance of Dying Cells in vitro and in vivo 572
24.2.3.6 Clearance of Apoptotic Cells: Tolerance versus Autoimmunity 575
24.3 Epistatic Effects of Background Genes on Gene-targeted Models of SLE: The Importance of Appropriate Controls 577
24.4 Conclusions 579
References 580

25 Perspectives 591
K. Michael Pollard

25.1 Introduction 591
25.2 Autoantibodies and Autoimmunity 591
25.3 Autoantibodies as Diagnostic Markers 592
25.4 Autoantibodies as Molecular and Cellular Probes 593
25.5 Autoantibodies in Experimental Models of Autoimmunity 594
References 595

Subject Index 599
Preface

The basis for this book was a chapter written for the 2nd edition of R.A. Meyers’ *Encyclopedia of Molecular Cell Biology and Molecular Medicine*. Entitled *Autoantibodies and Autoimmunity*, that chapter sought to take a different approach in reviewing the broad field that encompasses autoimmunity. This was in part due to my own research experiences, but also due to the realization that autoimmunity, and autoantibodies in particular, have contributed to more than just the medical sciences.

Historically autoantibodies have served as indicators of an autoimmune response and early studies focused on their clinical and diagnostic significance. Today many autoantibody specificities contribute as diagnostic and prognostic indicators in clinical medicine. The burgeoning numbers of known autoantibodies has revolutionized methods of detection leading to development of multiplex assays capable of identifying numerous diagnostically important autoantibodies in a single assay.

It remains unknown why distinct profiles of autoantibodies occur in autoimmune diseases, particularly systemic autoimmune diseases. Experimental studies suggest that both MHC and non-MHC genes contribute to disease specific autoantibody profiles, and that the presence or absence of particular cytokines may also play a role in determining autoantibody profiles. Nonetheless while it is clear that disease specific autoantibodies are acting as “molecular reporters”, the message they are relaying is still garbled. Genetic research using animal models will play an increasingly important role in deciphering the messages ingrained in autoantibody responses.

Ironically the movement toward high-throughput assays to detect autoantibodies threatens the clinical usefulness of the immunofluorescence test (IFT) which was instrumental in the original description of many autoantibody specificities. The dramatic visual images of antibodies binding to sub-cellular organelles and substructures that are so readily revealed by this technique can be both stunningly beautiful and biologically significant. Once the purview of the clinical Immunologist/Rheumatologist seeking to diagnose autoimmune diseases, the IFT is increasingly found in the laboratories of cellular and molecular biologists questing for answers at the very frontiers of biology.
This book would not have been possible without the outstanding contributions of a group of highly talented and internationally respected authors. I am very grateful to each author for giving their valuable time and effort toward compilation of this book, and to Janet Hightower, Digital Artist in the BioMedical Graphics Department of The Scripps Research Institute, for the front cover art. I am indebted to Andreas Sendtko at Wiley-VCH for the initial suggestion that the Encyclopedia chapter might be the basis for a book. I am also grateful to Andreas Sendtko and his colleagues at Wiley-VCH for bringing the book to life.

La Jolla, October 2005

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Part 1
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