

Contents

Preface

Chapter 1

Hot Topics in Autoimmunity

- 1 Intravenous immunoglobulins: the best biologic treatment available for autoimmune diseases 2
Oded Shamriz, Miri Blank, Yehuda Shoenfeld
- 2 Can we cure autoimmune diseases? 7
Falk Hiepe, Tobias Alexander, Andreas Radbruch and Renate Arnold
- 3 Scleroderma-like skin fibrosis caused by genetic defect of ribonucleotide excision repair 9
Björn Hiller, Marian Schulz, Martin Achleitner, Min Ae Lee-Kirsch, Claudia Günther, Inga Melchers, Thomas Krieg, Rayk Behrendt, Axel Roers
- 4 Breaching intestinal tight junction permeability associated with industrial food additives might explain the surge in autoimmune disease incidence. 10
Aaron Lerner, Peter Trinder, Torsten Matthias
- 5 Autoinfectome: a tool to study the link between infection and autoimmunity 17
Dimitrios P. Bogdanos, Lazaros Sakkas, Yehuda Shoenfeld

Chapter 2

From Research to Clinical Application

- 6 Anti-beta2 glycoprotein I epitope specificity: from experimental models to diagnostic tools 25
Pier Luigi Meroni
- 7 Autoantibodies to rods/rings induction in monitoring HCV therapy 31
Edward K.L. Chan
- 8 Glycosylation of autoantibodies as inflammatory marker 32
Luis Munoz and Martin Herrmann
- 9 The role of autoantibodies and other biomarkers for a personalized treatment in SLE 39
Falk Hiepe, Tobias Alexander, Bimba F. Hoyer, Thomas Rose, Velia Gerl, Aderajew Waka, Andreas Grützkau and Robert Biesen
- 10 Biomarker support for SLE-drug development: NavigAID SLE 41
Petra Budde
- 11 Diagnostic utility of tumor associated autoantigen panels for autoantibody profiling in cancer: Recent advances and future directions 43
Tino W. Sanchez, Susanne Montgomery, Colwick Wilson, Jian-Ying Zhang, and Carlos A. Casiano

12	Quantification of autoantibodies to receptors of the insulin receptor family in patients with insulin resistance	61
	<i>Christian Schwiebert, Tim Welsink, A. Schuette, N.P. Becker, R.J. Brown, P. Gorden, W.B. Minich, L. Schomburg</i>	
13	Massive screening of autoantibodies in autoimmune diseases: The SeroTag Approach	62
	<i>Peter Schulz-Knappe</i>	
14	Mining for common reactivity patterns of human autoantibodies against endogenous protein targets using clustered autoantibody reactivities	63
	<i>Hans-Dieter Zucht</i>	

Chapter 3

Autoantibodies in Systemic Autoimmune Rheumatic Diseases

Autoantibodies in Rheumatoid Arthritis

15	The multiple roles of autoantibodies in rheumatoid arthritis: diagnostic tools, prognostic markers and pathogenetic players	66
	<i>Günter Steiner</i>	
16	A comparative analysis of anti-CCP2 and anti-CEP-1 autoantibodies in various chronic arthritides	74
	<i>Carla Onnekink and Ger J.M. Pruijn</i>	
17	An extended version of the ISAC solid phase microarray for the detection of autoantibodies associated with rheumatic diseases	81
	<i>Johan Rönnelid</i>	
18	Autoantibodies to two novel peptides in seronegative and early rheumatoid arthritis	83
	<i>Liesbeth M. De Winter, Wendy L. J. Hansen, Hanna W. van Steenbergen, Piet Geusens, Jan Lenaerts, Klaartje Somers, Piet Stinissen, Annette H. M. van der Helm-van Mil and Veerle Somers</i>	
19	Anti-CARP antibodies identify a significant number of seronegative EORA and PMR patients	85
	<i>Marcos López-Hoyos, Lorena Álvarez-Rodríguez, Michael Mahler, Silvia Torices, Jaime Calvo-Alén, Ignacio Villa, Andrea Seaman, Victor Martínez-Taboada</i>	
20	Determining ACPA levels using QUANTA Flash CCP3, and their impact on likelihood of rheumatoid arthritis in a large Swiss patient population	87
	<i>Michael Mahler, Chelsea Bentow, Peter Martis, Tyler Webb, Pascale Roux-Lombard, Sylvette Bas, Cem Gabay</i>	
21	Biological treatment and QuantiFERON-TB Gold test in 2011-2014	89
	<i>Darina Kozakova, E. Zanova, I. Rybar, M. Polanova, J. Rovensky</i>	
22	Anti-drug antibodies in patients treated with TNF inhibitors	91
	<i>Werner Klotz, L. Boso, Th. Haueis, G. Zangerl, Manfred Herold</i>	

Autoantibodies in Idiopathic Myositis and Overlap Syndromes

- 23 Clinical significance and new detection system of autoantibodies in myositis and interstitial lung disease 94
Tsuneyo Mimori and Shinji Sato
- 24 Idiopathic inflammatory myopathies: serological and clinical correlations. Analysis of a monocentric series 96
Anna Lisa Giuliani, Federica Furini, Andrea Lo Monaco, Renato La Corte, Francesco Di Virgilio, Marcello Govoni
- 25 Risk factors for life prognosis of interstitial lung disease in dermatomyositis patients with anti-melanoma differentiation-associated gene 5 antibody 98
Yuji Hosono, Ran Nakashima, Shuji Akizuki, Kosaku Murakami, Yoshitaka Imura, Naoichiro Yukawa, Yoshifuji Hajime, Ohmura Koichiro, Tsuneyo Mimori
- 26 Autoantibodies to the cohesin complex: a novel myositis autoantigen 100
Shin Tanaka, S. John Calise, Yurie Satoh, Yoshiya Tanaka, Monica Vazquez del Mercado, Gabriel R. Medrano, Eric S. Sobel, Westley H. Reeves, Edward K.L. Chan, Minoru Satoh
- 27 Detection of myositis specific autoantibodies: comparison between line blot assay and “gold standard” immunoprecipitation method 102
Micaela Fredi, A. Ceribelli, Iliana Cavazzana, C. Mordenti, F. Ferrari, N. Carabellese, A. Tincani, M. Satoh, Franco Franceschini
- 28 Detection of anti-Ku and other autoantibodies in a rare cohort of pediatric patients with autoimmune hepatitis (AIH) and systemic lupus erythematosus (SLE) or mixed connective tissue disease (MCTD) overlap 104
Gary L. Norman, Zakera Shums, Jay Milo, Marianne Samyn, Rodrigo Liberal, Diego Vergani, Giorgina Mieli-Vergani

Autoantibodies in Systemic Sclerosis

- 29 Autoantibodies to a novel Th/To derived antigen identify patients with limited cutaneous form of systemic sclerosis and late pattern nailfold changes 108
Martial Koenig, Jean-Luc Senécal, Gemma Perez, Marvin J. Fritzler, Andrea Seaman, Chelsea Bentow, Tony Camacho, Michael Mahler
- 30 Anti-Th/To (Rpp25 and Rpp38) antibodies in a large cohort of Dutch systemic sclerosis patients 110
Jaap Bakker, Andrea Seaman, Iris Markusse, Pascal Schippers, Chelsea Bentow, Jeska de Vries-Bouwstra, Michael Mahler
- 31 Anti-Th/To (Rpp25, Rpp38, and hPop1) antibodies in a large cohort of North American systemic sclerosis patients 112
Michael Mahler, Andrea Seaman, Chelsea Bentow, Haiyan Hou, Marie Hudson, Shervin Assassi, Marvin J. Fritzler

-
- 32 Frequency and clinical profiles of autoantibody (AA) negative and anti-nuclear antibody (ANA) negative patients in an Australian cohort of Systemic Sclerosis (SSc) patients 114
Karen A. Patterson, P.J. Roberts-Thomson, S. Lester, J.A. Tan, P. Hakendorf, M. Rischmueller, J. Zochling, J. Sahhar, P. Nash, J. Roddy, C. Hill, M. Nikpour, W. Stevens, S.M. Proudman, J.G. Walker
- 33 Expanding the autoantibody testing profile in systemic sclerosis: results from the Leiden Systemic Sclerosis cohort 116
Jaap Bakker, Pascal Schippers, Iris Markusse, Jeska de Vries-Bouwstra
- 34 B regulatory cell deficiency inversely correlates with antigen-specific autoantibody responses in patients with systemic sclerosis 118
Athanasios Mavropoulos, Christos Liaskos, Theodora Simopoulou, Wolfgang Meyer, Areti Varna, Christina Katsiari, Dimitrios P. Bogdanos, Lazaros I. Sakkas
- 35 Autoimmune liver disease-related autoantibodies in patients with systemic sclerosis 120
Christos Liaskos, Athanasios Goutzourelas, Theodora Simopoulou, Maria Barmakoudi, Evaggelia Georgiou, Wolfgang Meyer, Christina Katsiari, Dimitrios P. Bogdanos, Lazaros I. Sakkas
- 36 ssDNA autoantibodies in patients with systemic sclerosis 122
Christos Liaskos, Maria Michalopoulou, Theodora Simopoulou, Athanasios Mavropoulos, Evaggelia Georgiou, Giannis Alexiou, Gary L. Norman, Dimitrios P. Bogdanos, Lazaros I. Sakkas
- 37 Human cytomegalovirus specific antibody responses in patients with systemic sclerosis 124
Christos Liaskos, Emmanouela Marou, Georgios Euthymiou, Theodora Simopoulou, Christina Katsiari, Wolfgang Meyer, Dimitrios P. Bogdanos, Lazaros I. Sakkas
- 38 Scleroderma specific autoantibodies in patients affected by morphea 125
Ilaria Cavazzana, M.C. Arisi, M. Fredi, M.E. Cerutti, F. Ferrari, N. Carabellese, A. Tincani, P.G. Calzavara-Pinton, F. Franceschini
- 39 Autoantibodies against tubular basement membrane in progressive systemic sclerosis are directed against Scl-70 127
Lars Komorowski, M. Scharf, B. Teegen, K. Rentzsch, W. Schlumberger, W. Stöcker
- 40 Pulmonary involvement in systemic sclerosis: could uncommon antibodies be useful? 129
Noel Lorenzo Villalba, Patricia Nogueira Salgueiro, Taiomara Fernández González, Jesús Santana Benítez, Casimira Domínguez Cabrera, Inmaculada Alarcón Torres, Maria Belén Alonso Ortiz
- 41 Development of a qualitative ELISA for the detection of anti-BICD2 autoantibodies in systemic sclerosis 131
Daniel Wirtz, Johannes Schulte-Pelkum, Petra Budde, Peter Schulz-Knappe, Hans-Dieter Zucht, Suzana Jordan, Oliver Distler, Britta Maurer, Nicolas Hunzelmann, Karsten Conrad, Matthias Schneider
- 42 Comparison of EliA and QUANTA Flash for the detection of anti-PM/Scl and anti-RNA Pol III antibodies in a cohort of systemic sclerosis patients 133
Michael Mahler, Chelsea Bentow, Pascal Schippers, Iris Markusse, Andrea Seaman, Jeska de Vries-Bouwstra, Jaap Bakker

- 43 Diagnostic performance of novel autoantibodies for systemic sclerosis 135
Johannes Schulte-Pelkum

Autoantibodies in Systemic Lupus Erythematosus

- 44 One ELISA to catch them all – Secondary necrotic cell (SNEC) ELISA as a novel approach 137
 for autoantibody detection in systemic lupus erythematosus (SLE)
Mona Biermann, Sebastian Boeltz, Veronika Gröger, Benjamin Haugg, Gerhard Krönke, Johan van der Vlag, Martin Herrmann, Luis Munoz
- 45 The oxidative burst mediates anti-inflammatory clearance of dead cells in a mouse model 138
 of systemic lupus erythematosus and inflammatory arthritis
Deborah Kienhöfer, Jonas Hahn, Luis Munoz, Rikard Holmdahl, Georg Schett and Markus Hoffmann
- 46 Mathematical model of systemic lupus erythematosus (SLE) development: focus on the 140
 dynamics of immune complex formation and Th17 immune response
Sergei R. Kuznetsov, V.I. Shishkin
- 47 QUANTA Flash anti-dsDNA chemiluminescent immunoassay results show stronger 142
 association with lupus nephritis than traditional ELISA
Chelsea Bentow, Gabriella Lakos, Peter Martis, Milagros Garcia, Odette Viñas, Gerard Espinosa, Ricard Cervera, John G Hanly, Michael Mahler
- 48 Identification of homogeneous systemic lupus erythematosus (SLE) patient groups using 144
 clustered autoantibody reactivities
Petra Budde, Hans-Dieter Zucht, Daniel Chamrad, Anna Telaar, Stefan Vordenbäumen, Peter Schulz-Knappe, Matthias Schneider
- 49 Automated evaluation of *Crithidia luciliae* IFT as novel application of the “EUROPattern- 146
 Suite”
Stefan Gerlach, Kai Affeldt, Lena Pototzki, Christopher Krause, Jörn Voigt, Johanna Fraune, Winfried Stöcker, Kai Fechner

The DFS70/LEDGFp75 Autoantibody-Autoantigen System

- 50 The enigmatic DFS70/LEDGFp75 autoantibody-autoantigen system: from basic research to 149
 clinical applications
Anamika Basu, Leslimar Rios-Colon and Carlos A. Casiano
- 51 Evaluation of specific chemoluminescence, dot-blot and immuno-adsorption methods for 159
 confirmation of anti-DFS70 antibodies
Nicola Bizzaro, Francesco Cucchiaro, Fiorenza Pesente, Marilina Tampoia, Maria Infantino, Martina Fabris, Elio Tonutti
- 52 Comparison of full-length and truncated antigens for the detection of anti-DFS70 antibodies 167
Navid Zohoury, Karen Carrasco, Erika Aron, Roger Albesa, Gabriella Lakos, Michael Mahler
- 53 High prevalence of anti-DFS70 antibodies among patients from a large U.S. reference 169
 laboratory
Chelsea Bentow, Erika Aron, Michael Mahler, Paula Correia, Eugene Karayev, Dmitry Karayev

54	DFS70 autoantibodies are rare in healthy Danish individuals but may still serve as a diagnostic aid	171
	<i>Anna Christine Nilsson, Anne Voss, Søren Thue Lillevang</i>	
55	Anti-DFS70 antibodies without disease specific antibodies help to rule out ANA associated rheumatic diseases	173
	<i>Nadja Röber, Uwe Höpner, Martin Aringer, Sebastian Rudolph, Anett Gräßler, Kirsten Lüthke, Leonore Unger, Michael Mahler, Karsten Conrad</i>	

Chapter 4

Autoantibodies in Organ Specific Autoimmune Diseases

Autoantibodies in Autoimmune Neurologic Diseases

56	Anti-neuronal autoimmune encephalitis – diagnostic methods and interpretation of results	177
	<i>Romana Höftberger</i>	
57	Revealing new forms of autoimmune encephalitis associated with autoantibodies against neuron-specific Na/K-ATPase ATP1A3, neurochondrin, flotillin, and inositol trisphosphate receptors	178
	<i>Winfried Stöcker</i>	
58	Assays in demyelinating diseases and their assessment	181
	<i>Patrick Waters</i>	
59	Neurochondrin is a target for autoantibodies in a unique form of autoimmune cerebellitis associated with brainstem syndrome	182
	<i>Ramona Miske, N. Melzer, M. Scharf, H. Wiendl, S. Meuth, M. Synofzik, I.M. Dettmann, S. Mindorf, Y. Denno, B. Teegen, W. Stöcker, S. Brakopp, C. Probst, and Lars Komorowski</i>	
60	Identification of novel candidate antibody biomarkers in spinal cord injury	184
	<i>Ilse Palmers, Elke Ydens, Bart Depreitere, Andrew Maas, Kim Timmermans, Matthijs Kox, Eric Put, Sven Hendrix, Veerle Somers</i>	
61	Prevalence and clinical impact of anti-retinal antibodies in uveitis	186
	<i>Josianne C.E.M. ten Berge, Marco W.J. Schreurs, Jacolien Vermeer, Magda A. Meester-Smoor, Aniki Rothova</i>	
62	Anti-SPAG16 antibodies in primary progressive multiple sclerosis are associated with an elevated progression index	187
	<i>Laura de Bock, Judith Fraussen, Luisa M. Villar, José C. Álvarez-Cermeño, Bart Van Wijmeersch, Vincent van Pesch, Piet Stinissen and Veerle Somers</i>	
63	Diagnostic and prognostic significance of Immunoglobulin light-chain production in multiple sclerosis	189
	<i>Sergey V. Lapin, V.D. Nazarov, G.S. Makshakov, E.A. Surkova, E.P. Evdoshenko</i>	
64	Helicobacter pylori-specific antibody responses in patients with multiple sclerosis: relevance to disease pathogenesis	191
	<i>Georgios Euthymiou, Euthymios Dardiotis, Emmanouela Marou, Christos Liaskos, Wolfgang Meyer, Lazaros I. Sakkas, Georgios Hadjigeorgiou, Dimitrios P. Bogdanos</i>	

-
- 65 Indirect immunofluorescence assay on fixed HEp-2 M4 cells for routine diagnostics of anti-muscle-specific kinase autoantibodies in Myasthenia gravis 193
Sandra George, Silvia Paulick, Ilka Knütter, Nadja Röber, Rico Hiemann, Dirk Roggenbuck, Karsten Conrad and Jan-Heiner Küpper
- 66 Detection of anti-MuSK antibodies by a novel quantitative ELISA 194
Jan Damoiseaux, Joyce Giesen, and Marc De Baets
- 67 Expression of nicotinic acetylcholine receptor subunits in HEp-2 cells for immunodetection of autoantibody specificities in sera from Myasthenia gravis patients 195
Sandra George, Monika Noack, Monika Vanek, Juliane Rentzsch, Nadja Röber, Karsten Conrad, Dirk Roggenbuck and Jan-Heiner Küpper

New Insights in the Diagnosis of Celiac Disease

- 68 Overview of celiac disease and the special challenges in diagnostics 197
Markku Mäki
- 69 Influence of diet in the first year of life on the development of celiac disease. Major results of the PREVENTCD study 202
Ilma R. Korponay-Szabó
- 70 Laboratory diagnosis of celiac disease 207
Xavier Bossuyt
- 71 Comparison of the reliability of celiac disease serology to reflect intestinal damage 214
Torsten Matthias, Patricia Jeremias, Sandra Neidhöfer, Aaron Lerner
- 72 The influence of a gluten free diet on IgA-mediated diseases 215
Renato C. Monteiro
- 73 A highly sensitive screening test for excluding celiac disease in non high risk patients 217
Ellen G. van Lochem, E. van Koolwijk, L. Witt, M. Salden, E. Leijn, J. Uil, B.J.M. Witteman, P. Wahab
- 74 The 3-dimensional structures of human and microbial transglutaminases complexed to gliadin are similar 219
Patricia Jeremias, Sandra Neidhöfer, Torsten Matthias
- 75 The diversities between the neo-epitope and the IgA- tissue transglutaminase autoantibodies in celiac disease 220
Aaron Lerner, Sandra Neidhöfer, Patricia Jeremias, Torsten Matthias
- 76 Microbial transglutaminase is a potential environmental inducer of celiac disease 227
Aaron Lerner, Torsten Matthias
- 77 Epitopes of human and microbial transglutaminases are similarly recognized by celiac disease sera 234
Patricia Jeremias, Kai Prager, Sandra Neidhöfer, Torsten Matthias
- 78 Antibodies against neo-epitope tTg complexed to gliadin are more reliable than anti-tTg for the diagnosis of pediatric celiac disease 235
Torsten Matthias, Patricia Jeremias, Sandra Neidhöfer, Aaron Lerner

79	The world incidence of celiac disease is increasing <i>Aaron Lerner, Patricia Jeremias, Torsten Matthias</i>	237
80	The break in intestinal tight junction permeability by industrial food additives explains the rising incidence of autoimmune diseases <i>Aaron Lerner, Torsten Matthias</i>	238
81	The site of duodenal inflammation in coeliac disease <i>Fabiana Zibera, Luigina De Leo, Marianna Salemm, Vincenzo Villanacci, Sara Quaglia, Vatta Serena, Stefano Martelossi, Alessandro Ventura, Tarcisio Not</i>	239
82	Short gluten challenge to support celiac disease diagnosis <i>Fabiana Zibera, Luigina De Leo, Carmen Gianfrani, Stefania Picascia, Sara Quaglia, Vatta Serena, Stefano Martelossi, Giorgio Cozzi, Alessandro Ventura, Tarcisio Not</i>	241
83	The industrial food additive microbial transglutaminase is immunogenic in children with celiac disease <i>Aaron Lerner, Torsten Matthias, Patricia Jeremias, Sandra Neidhöfer</i>	243
Autoantibodies in Liver and Gastrointestinal Diseases		
84	Autoantibodies in liver autoimmunity: diagnostic, clinical and prognostic significance <i>Eirini I. Rigopoulou, Andreas L. Koutsoumpas, Dirk Roggenbuck, Maria G. Mytilinaiou, Dimitrios P. Bogdanos</i>	245
85	Prevalence and significance of PR3-ANCA in children and adolescents with inflammatory bowel disease <i>Josefine Jahn, Nadja Röber, Karsten Conrad, Martin W. Laass</i>	252
86	PR3-ANCA: A biomarker for the differentiation of ulcerative colitis and Crohn's disease <i>Michael Mahler, Chelsea Bentow, Daniël Blockmans, Vera Ballet, Severine Vermeire, Xavier Bossuyt</i>	254
87	Diagnostic significance of ASGPR, filamentous actin and dsDNA autoantibodies in children with autoimmune hepatitis type 1 <i>Christos Liaskos, Maria G. Mytilinaiou, Maria Michalopoulou, Tassos Grammatikopoulos, Andreas L. Koutsoumpas, Athanasios Mavropoulos, Eirini I. Rigopoulou, Giorgia Mieli-Vergani, Diego Vergani, Dimitrios P. Bogdanos</i>	256
88	ASCA and pancreatic specific autoantibodies as markers of paratuberculosis, the ruminant model of Crohn's disease <i>Christos Liaskos, Maria G. Mytilinaiou, Vassiliki Spyrou, Andreas L. Koutsoumpas, Labrini V. Athanasiou, Athanasios Mavropoulos, Georgios S. Amiridis, Dirk Roggenbuck, Charalambos Billinis, Dimitrios P. Bogdanos</i>	258
89	Application of a liver autoantibody profile in the diagnostic work up of inflammatory bowel diseases, primary sclerosing cholangitis and autoimmune sclerosing cholangitis <i>Christos Liaskos, Foteini D. Kalousi, Dimitra P. Mitsiou, Polychronis Pavlidis, Andreas L. Koutsoumpas, Maria G. Mytilinaiou, Athanasios Mavropoulos, Alastair Forbes, Dimitrios P. Bogdanos</i>	260

90	Diagnostic significance of autoimmune rheumatic diseases-related autoantibodies in patients with inflammatory bowel diseases	262
	<i>Polychronis Pavlidis, Christos Liaskos, Zakera Shums, Andreas L. Koutsoumpas, Stamatina Rentouli, Maria G. Mytilinaiou, Athanasios Mavropoulos, Gary L. Norman, Alastair Forbes, Dimitrios P. Bogdanos</i>	
91	Autoantibody profile of adult patients with childhood onset type 2 autoimmune hepatitis	264
	<i>Simon Lytton</i>	
92	Prevalence and clinical relevance of autoantibodies directed against glycoprotein 2 isoforms in pediatric patients with inflammatory bowel disease	265
	<i>Nadja Röber, Martin W. Laass, Alexander Goihl, Josefine Jahn, Lydia Noß, Dirk Reinhold, Dirk Roggenbuck, Karsten Conrad</i>	

Chapter 5

Methodical Aspects and Diagnostic Strategies

93	Autoantibody testing and methodological platforms: a story with several versions	268
	<i>Alessandra Dellavance, Luis Eduardo Coelho Andrade</i>	

Harmonization and Standardization of Autoantibody Testing

94	The international consensus on standardized nomenclature of antinuclear antibody HEp-2 Cell patterns (ICAP) initiative - Current state and perspectives	282
	<i>Edward K.L. Chan, Wilson de Melo Cruvinel, and Luis E.C. Andrade</i>	
95	The use of different commercial HEp-2 cell assays - A challenge for a consensus on HEp-2 cell pattern?	289
	<i>Benjamin Glauche, Nadja Röber, Christine Gräfe, Uta Kießling, Andrea Brandis, Manuela Rejzek, Annett Skupin, Karsten Conrad</i>	
96	The International Autoantibody Standardization (IAS) initiative Current state and perspectives	291
	<i>Pier Luigi Meroni, Luis Andrade, Johan Rönnelid, Joanna Sheldon, Yehuda Shoenfeld, Maria Orietta Borghi</i>	
97	Current status and issues of concern for the diagnostic autoantibody tests	298
	<i>Minoru Satoh, Shin Tanaka, Edward K.L. Chan</i>	
98	Results of the Islet Autoantibody Standardization Program 2015 Workshop	307
	<i>Michael Schlosser, Vito Lampasona, Alistair J.K. Williams, David L. Pittman, Beena Akolkar, William E. Winter, Peter Achenbach</i>	
99	Investigation of patient samples quality control usability in assessment of solid immunoassay performance consistency: experience from six months follow-up	309
	<i>Andrea Tesija Kuna, Ines Vukasovic, Nada Vrkic</i>	

The HEp-2 Cell Assay

100 Current concepts and future directions for the assessment of autoantibodies to cellular antigens referred to as anti-nuclear antibodies <i>Michael Mahler, Pier-Luigi Meroni, Xavier Bossuyt, Marvin J. Fritzler</i>	312
101 PCQAUTO: 7 years with a Quality Control Program for ANA-HEp2 in Brazil <i>Carlos Alberto von Mühlen</i>	339
102 ANA testing – how often is often enough? <i>Werner Klotz, Manfred Herold</i>	348
103 ANA testing – human eye versus computer <i>Werner Klotz, Manfred Herold</i>	350
104 Added value of the automated indirect immunofluorescence for antinuclear antibody testing in a secondary setting <i>Matthijs Oyaert, Isabelle Ravelingien, Lieve Van Hoovels</i>	355
105 ANA-Detection by Indirect immunofluorescence (IFT) on HEp-2 cells versus other screening methods: experience from ANA proficiency testing in the German INSTAND e.V. QA program <i>Martin Blüthner</i>	357
106 Comparison of ANA detected by automated indirect immunofluorescence assay (IFA) and by solid phase assays in a cohort of challenging ANA IFA positive samples <i>Michael Mahler, Chelsea Bentow, Peter Martis, Tyler Webb, Luis Fernández Pereira, Manuel Espárrago Rodilla, Montaña Jimenez Alvaro, Inmaculada Alcalá Peña</i>	359
107 Re-formulated IFA mounting media has improved fade resistance <i>John Breneman, Cindy Liedstrand, Jeri Seiki, Richard Brandt, Xiaowen Guo</i>	361
108 Good correlation between solid phase screening method and confirmatory assays for autoantibodies to nuclear antigens (ANA) <i>Carol Buchner, Tony Camacho, Carolina Auza, Chelsea Bentow, Gabriella Lakos, Michael Mahler</i>	363
109 PhDTM and PhD™ Ix System Sample Probe Carry-Over for IFA and EIA Assays <i>John Breneman, Shuxia Zhou, Cindy Liedstrand, Micah Majarian, Xiaowen Guo</i>	365
110 Characterization of antinuclear antibodies in patients with positive antimitochondrial antibodies <i>Ana Kozmar, Nada Tomić-Sremec</i>	367
111 Lack of association of anti-nuclear autoantibodies with selected cardiovascular and metabolic parameters – findings of a multicentre population-based study in Germany <i>Nadja Röber, Manas K. Akmatov, Jakob Linseisen, Christa Meisinger, Wolfgang Ahrens, Kathrin Günther, Bastian Krone, Susanne Moebus, Nadia Obi, Dieter Flesch-Janys, Halina Greiser, Rudolf Kaaks, Rico Hiemann, Karsten Conrad, Frank Pessler</i>	368

ANCA

112 The spectrum of autoantibodies found in systemic vasculitis: key advances and perspectives <i>Elena Csernok</i>	371
113 Diagnostic ANCA algorithms in daily clinical practice: evidence, experience, and effectiveness <i>Jan Damoiseaux, Judith Bons, and Pieter van Paassen</i>	376

114 How do first, second, and third generation ANCA assays relate in daily clinical practice?	383
<i>Judith A.P. Bons, Pieter van Paassen, Jan Damoiseaux</i>	
115 Automated immunofluorescence microscopy for instant screening and confirmation of ANCA	384
<i>Stefan Gerlach, Nicola Hochstrate, Kai Affeldt, Vanessa Viertel, Christopher Krause, Jörn Voigt, Johanna Fraune, Winfried Stöcker, Kai Fechner</i>	
116 Evaluation of a multiparametric spotimmunoassay (SIA) for the detection of autoantibodies in ANCA-associated vasculitis	386
<i>Kirsten Kropf, Erik Höchel, Klemens Löster, Silvia Porstmann, Tomas Porstmann</i>	
117 Evaluation of ANA and ANCA testing by the fully automated IIF system HELIOS®	388
<i>Boris Gilburd, Nancy Agmon-Levin, T. Martins, A. Petzold, Torsten Matthias, Yehuda Shoenfeld</i>	
Multiparametric Autoantibody Testing	
118 Multiplex testing in autoimmune diseases	390
<i>Jan Damoiseaux</i>	
119 Microarray for autoantibody detection	396
<i>Xavier Bossuyt</i>	
120 Multiplex antiphospholipid antibody testing using a hydrophobic membrane can differentiate patients with antiphospholipid syndrome from asymptomatic carriers	397
<i>Dirk Roggenbuck, Maria Orietta Borghi, Valentina Somma, Thomas Büttner, Peter Schierack, Katja Hanack, Claudia Grossi, Caterina Bodio, Philipp von Landenberg, Francesco Boccellato, Pier Luigi Meroni</i>	
121 The BIOPLEX® 2200 antiphospholipid syndrome (APS) multiplex immunoassays demonstrate higher analytical sensitivity	403
<i>M.A. Saunders, Maria Crisostomo, Elisa Barrett and H. Scholz</i>	
122 Next generation ANA testing: combination of screening and confirmatory testing	405
<i>Juliane Scholz, Kai Grossmann, Ilka Knütter, Rico Hiemann, Mandy Sowa, Nadja Röber, Stefan Rödiger, Peter Schierack, Dirk Reinhold, Dimitrios P. Bogdanos, Pier Luigi Meroni, Antonella Radice, Karsten Conrad, Dirk Roggenbuck</i>	
123 Multiparametric determination of autoimmune liver disease specific autoantibodies by CytoBead® assay	407
<i>Mandy Sowa, Juliane Scholz, Kai Grossmann, Rico Hiemann, Benjamin Glauche, Nadja Röber, Karsten Conrad, Dirk Roggenbuck</i>	
124 Development of a quantitative immunofluorescence-based assay for the detection of islet autoantibodies	409
<i>Katerina Vafia, Anne Eugster, Paul Czernichow, Marie-Jose Lecomte, Marc Bickle, Ezio Bonifacio</i>	
125 Automated analysis of DNA double-strand break formation (γ H2AX foci assay) in human peripheral blood mononuclear cells using the AKLIDES system	411
<i>Dirk Reinhold, Lisa Heiserich, Rico Hiemann, Ulrich Sack, Dirk Roggenbuck, Annika Reddig</i>	
126 Digital enumeration of double strand breaks via γ H2AX and associated biomarkers in a computing environment for reproducible research	413
<i>Stefan Rödiger, Michał Burdukiewicz, Lisa Heiserich, Peter Schierack, Dirk Roggenbuck</i>	