Year 3, No. 2, October 2016

Auto-immunity

CLOSE UP

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11th International Symposium on Autoimmunity
Athens, Greece, November 24-25, 2016

A.MENARINI diagnostics

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Aims & Scope
Autoimmunity Close Up is the new A. Menarini Diagnostics publication in the field of autoimmunity. The magazine establishes an interdisciplinary forum connecting experts involved in all aspects of the complex world of autoimmunity diagnosis.
Autoimmunity Close Up provides our customers and colleagues with important product information and updates, insights into issues of general interest in autoimmunity and the latest findings in autoimmune diseases.
The magazine encompasses a wide range of topics including connective tissue diseases, rheumatoid arthritis, antiphospholipid syndrome, celiac disease, IBD, vasculitis, autoimmune thyroid and liver diseases, as well as POCT, ITC & health economics.
Each issue features reviews, editorials, and interviews with leading scientists who actively participate in building the content.
If you have any questions or require further information about *Autoimmunity Close Up*, please contact your local A. Menarini Diagnostics Affiliate or Distributor.

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In this issue:

EDITOR'S NOTE

The Choice of Facts

"The search for truth should be the goal of our activities; it is the sole end worthy of them. Doubtless we should first bend our efforts to assuage human suffering, but why? Not to suffer is a negative ideal more surely attained by the annihilation of the world. If we wish more and more to free man from material cares, it is that he may be able to employ the liberty obtained in the study and contemplation of truth."

This was what Henry Poincaré, a French author, wrote in his book "The Value of Science" (The Science Press, New York, 1907), and these are the guiding principles that drive our constant attention and closeness to scientific activities.

For this reason, we are proud to announce the 11th Symposium on Autoimmunity, completely organised and sponsored by **A. Menarini Diagnostics**.

The event, to be held in Athens, Greece, from Thursday 24th to Friday 25th November 2016, is entitled "Critical Tests and Critical Values in Autoimmune Testing", and will be chaired by Dr Nicola Bizzaro from Italy.

The Symposium is a periodic meeting that brings together about 200-250 specialists in the field of autoimmunity. By "specialists" we mean not only laboratory scientists but also all those professionals who work in crucial related fields, such as clinical specialists in rheumatology, gastroenterology, dermatology, and so on.

The conference offers a large number of keynote lectures presented by speakers of international standing, during plenary and day-two sessions, with plenty of time allotted for discussion. Participants will also be engaged proactively during the final "meet the expert" event.

Attendees at the conference will be brought up to date on all the major issues spanning the entire spectrum of autoimmunity.

There will be talks on traditional topics as well as innovative topics of widespread interest, with a focus on technologies and methodologies that are totally new to autoimmune diagnostics.

The Symposium will be of interest to all participants thanks to the diversity and excellence of the sessions, which revolve around the inter-relation and increasing integration between Laboratory Medicine and Clinical Medicine (for the prediction, prevention, diagnosis, prognosis and treatment of various autoimmune pathological conditions and not only).

More in detail, this 11th International Symposium focuses on the pathogenesis, immunology, genetics, molecular biology, diagnostic auto-antibody testing, epidemiology, pathophysiology and treatment of autoimmune diseases. The range of disorders covered is comprehensive and encompasses connective tissue diseases, rheumatoid arthritis, gastrointestinal autoimmune diseases, liver diseases as well as point-of-care testing, evidence-based medicine, information and communications technology, health economics, and more.

Last but not least, the place that hosts this Symposium. Athens is the most popular tourist city in Greece and one of the most famous in the world: an ancient city with a huge variety of things to see and do. A fascinating place, it is one of the oldest cities in the world, and walking through its ancient Agora or around the Acropolis makes you feel you are treading on very important, if not sacred, ground.

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Athens can be considered a cultural and historical capital of Europe, with a long history dating from the first settlement in the Neolithic age. In the 5th century BC the city's values and civilization acquired a universal significance. Over the years, a multitude of conquerors occupied Athens and erected unique, splendid monuments - a rare historical palimpsest.

In this setting, **A. Menarini Diagnostics** has decided to organise an excellent scientific event, a unique way to emphasise how much we believe in "the value of science".

The other contributions to this issue of Autoimmunity Close Up provide an ideal complement for some of the topics addressed in the event. Daria Franceschi presents some considerations about one of the most classical methods for anti-nuclear antibody screening: the immunofluorescence technique. Keith Rawson, technical director at Cambridge Life Sciences, a business partner of **A. Menarini Diagnostics**, discusses in depth some interesting outcomes of one of the most innovative diagnostic devices for autoantibodies: the Zenit AMiDot array.

Massimo Donnini
International Product Manager Autoimmunity
A. Menarini Diagnostics

TECHNICAL INSIGHTS

Does the Perfect ANA Exist?

Daria Franceschi

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The antinuclear antibody (ANA) test is widely used as a serological marker of autoimmune disease. Antinuclear antibodies ideally bind to one or more antigens expressed within the nucleus of human cells. Used selectively, the ANA test can be a useful laboratory tool to help confirm or exclude the diagnosis of systemic rheumatic diseases. The indirect immunofluorescence technique (IIF) used to detect ANA was described as early as in 1958 by Friou et al.[1], and in 2009 the American College of Rheumatology issued a statement where the use of IIF was declared the gold standard method for ANA screening.[2]

ANA detected by IIF using HEp-2 cells are found in a high proportion of patients with systemic lupus erythematosus (SLE), systemic sclerosis (SSc), mixed connective tissue disease (MCTD), poly-dermato-myositis (PM/DM), Sjögren's syndrome (SjS), and other chronic inflammatory diseases.[3]

The quality of HEp-2 cells is therefore important in establishing an accurate and confident diagnosis.

But does the perfect ANA exist?

First of all, it would be necessary to identify the characteristics that make an ANA substrate a perfect substrate (Table 1).

The presence of a high number of mitotic cells, optimal and homogeneous cell morphology, good cell density and distribution and expression of relevant antigens are usually considered fundamental aspects when evaluating different HEp-2 substrates. Next to this, unspecific and background fluorescence and inter-lot variability have to be evaluated, the latter being the hardest or at least the most time-consuming.

When cells are observed under the microscope with a magnification of 40X, an acceptable number of mitosis per field is at least 3-5. Information on mitotic cell staining - positive or negative - is used to discriminate between staining patterns of interphase cells, so the possibility to clearly view mitosis when analyzing the images is mandatory.

Cell morphology is preferred to be homogeneous, even though this aspect is quite subjective and does not really affect the final diagnosis. In any case, it is a common idea that cells are likely to have the same shape and dimension and should be on the same layer with no overlaps.

Of course, when observing a slide's well under the microscope, no black areas – either in the middle or at the borders – should be evident. The cells should be fixed as a "carpet" over the whole available surface with the possibility to distinguish one cell from the other. The cell density has to be homogeneous and no clusters should form.

IFA pattern recognition is without any doubt one of the most important tools to aid in patient diagnosis. Understanding the patterns enables clinicians and laboratory personnel to perform the appropriate follow-up testing, confirm the diagnosis and predict the development of the disease. For example, a homogeneous ANA pattern reflects antibodies to dsDNA/chromatin and is often associated with SLE whereas a nucleolar ANA pattern can be found in the presence of SSc.[4] The five main nuclear patterns (homogenous, speckled, centromere, nucleolar, and nuclear dots) are usually easy to identify when working with consolidated HEp-2 substrates available on the market. Nowadays most of them show acceptable levels of diagnostic and analytic sensitivity from this point of view, and the diagnosis

Table 1: Characteristics of a perfect ANA substrate

Criteria to evaluate an ANA substrate	
Number of mitotic cells	At least 3 per field (40X)
Cell morphology	Homogeneous
Cell density	High and homogeneous
Unspecific fluorescence	Absent or low
Background fluorescence	Absent or low
Patterns recognition	Straightforward and clear
Slide preparation	Easy
Inter- and intra-lot variation	Absent or not significant

is usually reliable. However, despite being called ANA, these antibodies are also reactive against all types of cell organelles and subcellular structures, which makes the scenario more complicated. When the image suggests a mixed pattern or when faced with other, quite rare specific patterns, the quality of the substrate can make the difference by helping to reduce unnecessary reflex testing and offering considerable cost savings if the pattern is evident at first sight. So among all the criteria mentioned so far, capability of the substrate to highlight the correct staining pattern is the most important for determining the good quality of an IIF kit.

The IIF technique also requires the personnel to be well trained and skilled as sometimes background or cytoplasm or general unspecific fluorescence might be caused not only by a real poor specificity of the reagents used, but also by following an incorrect procedure while processing or washing the slide. Today, most of the slide preparation protocols described by the different manufacturers follow the same steps, but dealing with a substrate which is less sensitive than others to manual preparation can clearly help.

All of these considerations together show how difficult it is to evaluate different substrates from different suppliers, with many variables interfering with one another and many factors that sometimes contribute to the poor agreement between different assays, and make the reader confused or not confident in making the diagnosis.

The fixative used for the assay, the use of a polyconjugate or an IgG-specific conjugate, the growth time of the HEp-2 culture, the pH of the assay reagents and the concentration of Evans blue counterstain are other factors that increase variability and affect the reader's perception on the substrate under evaluation.[5]

Last but not least, a very common problem is the inability of some slide producers to maintain a high-level quality of the kits over time. Inter- but also intra-lot variability can be observed, with single wells being sometimes different within the same slide. This is because the preparation of the slides still follows a semi-manual procedure, so even when using the same cell culture and working with the same fixatives and reagents, the final product can be slightly different from well to well.

It is therefore difficult to state that the perfect ANA substrate exists.

Some might have a higher number of mitosis, some might have very nicely shaped cells, patterns might be clearer to interpret in some substrates rather than others, but overall we must remember that IIF is still a subjective method. Someone used to working with a strong counterstain might not appreciate a lower counterstain fluorescence, even though a diagnosis is ultimately possible with both kits.

Despite many attempts to harmonize the assay, immunofluorescent antinuclear antibody testing using HEp-2 cells is still suffering from the absence of a real standardization, and additional problems are caused by the subjectivity of the method and its interpretation, which remains strongly dependent on the personnel reading the images.

Finding the universally recognized perfect ANA substrate is a mission (almost) impossible.

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RESEARCH UPDATES

Performance Evaluation of an Improved Microarray Assay for Multiple Detection of Liver Associated Autoantibodies

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Introduction

The three main categories of autoimmune liver disease are autoimmune hepatitis (AIH), primary biliary cirrhosis (PBC) and primary sclerosing choloangitis (PSC), which are well-defined diseases with diagnosis based upon clinical, serological and liver pathology findings. The serological findings include the presence of anti-mitochondrial (M2) antibodies in PBC, anti-nuclear, anti-smooth muscle and anti-Liver Kidney Microsomal (LKM-1) antibodies in AIH and pANCA in PSC. Although most cases of autoimmune liver disease fit readily into one of these three categories, overlap syndromes (primarily of AIH with PBC or PSC) may comprise up to 10% of cases.[1] The multiple liver autoantibodies associated with autoimmune liver disease lend themselves to analysis by a microarray. The aim of this study was to evaluate the performance of the Zenit AMiDot Liver Autoimmune Disease (LAD) panel with normal blood donor sera and sera from autoimmune liver disease patients.

Materials and Methods

One hundred normal blood donor sera acquired from SLR Research Corporation, of unknown age and sex, were analysed with the Zenit AMiDot LAD panel (Product code: 43894, **A. Menarini Diagnostics**, Italy). The Zenit AMiDot LAD panel contains an 8-well activated glass slide with each well having an internal calibrator curve, dilution and assay controls and 19 autoantigens (Table 1).

Table 1: Zenit AMiDot LAD panel

Antigen	Source
M2	Recombinant (equal blend of PDC-E2/OGDC-E2/BCOADC-E2)
LKM-1	Recombinant
LC1	Recombinant
SLA	Recombinant
Sp100	Recombinant
gp210	Recombinant
Ro60 / SS-A	Recombinant
Ro52 / SS-A	Recombinant
La / SS-B	Recombinant
Sm	Native
U1-snRNP (A/C/68kD)	Recombinant (equal blend of A, C + 68kD)
Jo-1	Recombinant
Scl70	Native
dsDNA	Recombinant plasmid
CENP B	Recombinant
MPO	Native
BPI	Native
Elastase	Native
Cathepsin G	Native

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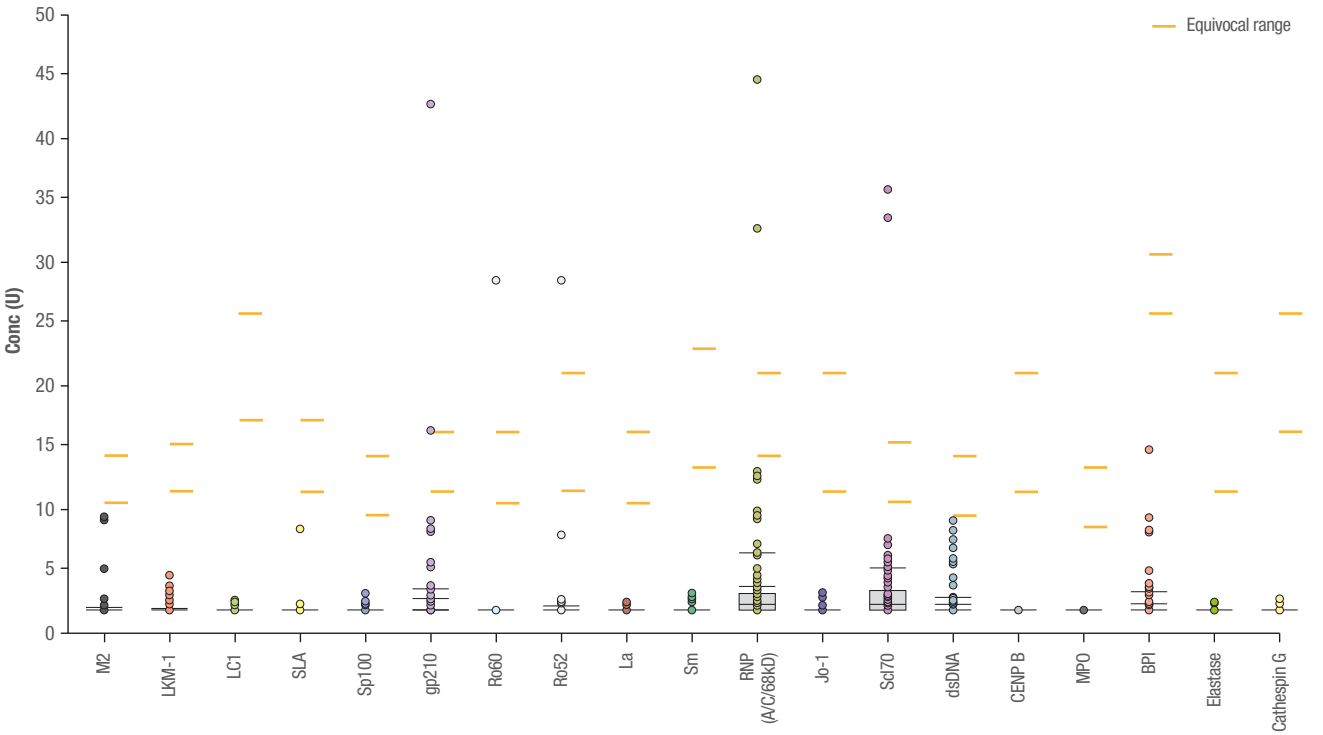
Figure 1: Analysis of normal blood donor sera on Zenit AMiDot LAD panel



The Zenit AMiDot LAD assay is similar to a conventional immunofluorescence assay (IFA) with patient samples diluted 1/80 in dilution buffer and antibodies detected using a goat anti-human IgG/IgA conjugated fluorophore. The total assay time is just over 1 hour. The assays were performed on the ZENIT UP automated ELISA microplate, IFA slide and AMiDot microarray processor (**A. Menarini Diagnostics**, Italy) using Zenit AMiDot reagents (product code: 43888), and analysed on the AMiDot Reader (Product code: 45010, **A. Menarini Diagnostics**, Italy) which calculates an antibody concentration (U) from the fluorescence intensity and the internal calibration curve.

Seventy-eight patient sera with autoimmune liver disease (ALD), 15 NEQAS General Autoimmune Serology samples for M2, ANA, LKM-1 and SMA and three control sera were also tested. The ALD patient samples were also tested on LI10DIV-24 or LI7DIV-24 Bluediver Dot kits (D-tek, Belgium) and some samples were additionally tested on ANA12SDIV-24 to confirm any ENA-positive results. Information was provided with the ALD patient sera reporting liver autoantibody status from the provider's reference method. The Bluediver Dot kits were read using Dr Dot software.

Results

The data for the 100 normal blood donor sera is shown in Figure 1 and summarised in Table 2. The mean, median, 95th and 98th percentile values of antibody concentrations are below the negative cut-off value for the associated antibody. There are seven values in Figure 1 which appear to be clearly positive, two for gp210, (15.1 U + 42.7 U), one for Ro52 (27.7 U) and two each for RNP and Scl70. Only the Ro52 and the lower RNP were confirmed as positive by the Bluediver Dot kit. The negative cut-off, equivocal and positive ranges were set on previous data comparing characterised positive and negative samples. Autoantibodies do occur in healthy patients which is why other diagnostic tests and/or clinical information should be used to determine the autoimmune status of the patient.

The data for the ALD patients, NEQAS and control sera is shown in Figure 2 and the concordance summarised in Table 3. The negative cut-off value was used for Zenit AMiDot and 5 AU was used for Bluediver Dot except for M2/nPDC which used 10 AU. Where there was a discrepancy between Zenit AMiDot and Bluediver Dot then concordance was arrived at by using the information provided with the samples or controls. There were only 8/576 discrepant results between Zenit AMiDot and Bluediver Dot that were altered by using the sample information. Two NEQAS samples were weak

Table 2: Normal blood donor result distribution

Antigen	N	Max (U)	Mean (U)	Median (U)	95th Percentile (U)	98th Percentile (U)	Negative cut-off	Equivocal	Positive
M2	100	7.8	0.2	0.0	0.4	3.6	< 9.0 U	9.0 - 13.0 U	> 13.0 U
LKM-1	100	2.9	0.1	0.0	1.2	2.0	< 10.0 U	10.0 - 14.0 U	> 14.0 U
LC1	100	0.8	0.0	0.0	0.0	0.5	< 16.0 U	16.0 - 25.0 U	> 25.0 U
SLA	100	6.8	0.1	0.0	0.0	0.5	< 10.0 U	10.0 - 16.0 U	> 16.0 U
Sp100	100	1.4	0.0	0.0	0.0	0.5	< 8.0 U	8.0 - 13.0 U	> 13.0 U
gp210	100	42.7	1.0	0.0	4.1	7.7	< 10.0 U	15.0 - 25.0 U	> 25.0 U
Ro60 / SS-A	100	0.0	0.0	0.0	0.0	0.0	< 9.0 U	9.0 - 15.0 U	> 15.0 U
Ro52 / SS-A	100	27.7	0.4	0.0	0.6	0.9	< 10.0 U	10.0 - 20.0 U	> 20.0 U
La / SS-B	100	0.6	0.0	0.0	0.0	0.4	< 9.0 U	9.0 - 15.0 U	> 15.0 U
Sm	100	1.4	0.0	0.0	0.0	0.7	< 12.0 U	12.0 - 22.0 U	> 22.0 U
U1-snRNP (A/C/68kD)	100	44.7	2.0	0.5	8.4	12.1	< 13.0 U	13.0 - 20.0 U	> 20.0 U
Jo-1	100	1.4	0.0	0.0	0.0	1.1	< 10.0 U	10.0 - 20.0 U	> 20.0 U
Scl70	100	35.4	1.6	0.6	4.3	6.5	< 9.0 U	9.0 - 11.0 U	> 11.0 U
dsDNA	100	7.5	0.5	0.0	4.1	5.9	< 5.0 U	5.0 - 8.0 U	> 8.0 U
CENP B	100	0.0	0.0	0.0	0.0	0.0	< 10.0 U	10.0 - 20.0 U	> 20.0 U
MPO	100	0.0	0.0	0.0	0.0	0.0	< 7.0 U	7.0 - 12.0 U	> 12.0 U
BPI	100	13.5	0.5	0.0	2.3	6.7	< 25.0 U	25.0 - 30.0 U	> 30.0 U
Elastase	100	0.6	0.0	0.0	0.0	0.0	< 10.0 U	10.0 - 20.0 U	> 20.0 U
Cathepsin G	100	0.9	0.0	0.0	0.0	0.0	< 15.0 U	15.0 - 25.0 U	> 25.0 U

Figure 2: Analysis of samples with specific liver autoimmune disease on Zenit AMiDot LAD panel

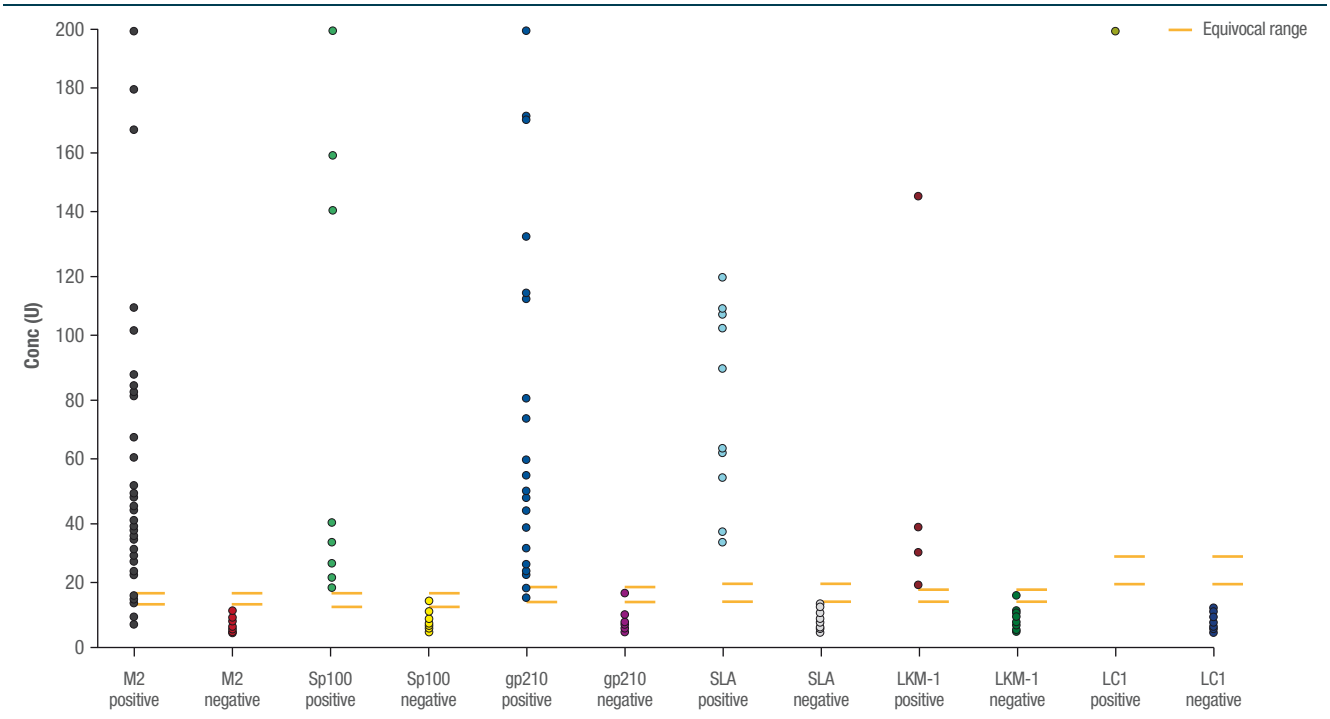


Table 3: LAD sensitivity and specificity

Antigen	Agreement	Sensitivity		Specificity		PPV		NPV	
		TP/TP+FN	%	TN/TN+FP	%	TP/TP+FP	%	TN/TN+FN	%
M2	97.9%	38/40	95.0%	56/56	100.0%	38/38	100.0%	56/58	96.6%
LKM-1	99.0%	4/4	100.0%	91/92	98.9%	4/5	80.0%	91/91	100.0%
LC1	100.0%	1/1	100.0%	95/95	100.0%	1/1	100.0%	95/95	100.0%
SLA	100.0%	10/10	100.0%	86/86	100.0%	10/10	100.0%	86/86	100.0%
Sp100	99.0%	19/19	100.0%	76/77	98.7%	19/20	95.0%	76/76	100.0%
gp210	99.0%	23/23	100.0%	72/73	98.6%	23/24	95.8%	72/72	100.0%
	Pos/Total								
Ro60 / SS-A	7*/96								
Ro52 / SS-A	16 (4*)/96								
La / SS-B	4*/96								
Sm	0/96								
U1-snRNP (A/C/68kD)	3/96								
Jo-1	0/96								
Scl70	3/96								
dsDNA	3 (1*)/96								
CENP B	3*/96								
MPO	0/96								
BPI	2/96								
Elastase	0/96								
Cathepsin G	0/96								

TP = True Positive
TN = True Negative
FP = False Positive
FN = False Negative
PPV = Positive Predictive Value
NPV = Negative Predictive Value
* = confirmed positive result

positive by Bluediver Dot but the NEQAS consensus result was negative. Two M2, three gp210 and one LKM-1 samples were negative by Bluediver Dot but the sample information was positive as was the Zenit AMiDot result. Evaluating the ALD patient data and normal blood donor sera for gp210 suggests that the negative cut-off be lowered from 15 U to 10 U which was used for the analysis in Table 3. Table 3 shows the sensitivity, specificity, positive and negative predictive values for the Zenit AMiDot M2, LKM-1, LC1, SLA, Sp100 and gp210 to be generally greater than 95%, the low number of LKM-1 and LC1 positive samples have a significant impact on PPV calculations. Table 3 also shows that some sera were positive for other autoantibodies on the Zenit AMiDot LAD panel in particular Ro52/SS-A. Those samples in the table marked with * have been confirmed as positive by another method.

Conclusions

The Zenit AMiDot LAD panel was improved by the addition of Sp100, gp210 and SLA autoantigens to the existing panel and the evaluation shows the Zenit AMiDot LAD panel to be an effective tool to aid the diagnosis and characterisation of ALD patient sera. It correlates with Bluediver Dot assays and any discrepancies may be due to the different sources of autoantigens used.

It is recommended that the equivocal range for gp210 be lowered to 10 – 15 U, dsDNA increased to 8 – 13 U and Scl70 increased to 9 – 14 U based on the data presented. The Zenit AMiDot LAD panel can be effectively used for screening patient samples and for confirmation of patient sera classified as positive by a different method such as immunofluorescence.

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AUTOIMMUNITY LAB

Evolution and Fine-Tuning of Immunodiagnostics

By the Editorial Team

Over the past two and a half decades, the diagnostics of autoimmune diseases (AIDs) has undergone substantial evolution which, as discussed in a paper by **Tozzoli et al.**[1], has also been the driving force for important insights in the pathophysiology of AIDs and achievements in their therapy.

The evolution of immunodiagnostics has been accompanied by extensive automation – as has also occurred in most areas of the clinical laboratory – and the progressive combination of specialty laboratories into a unique general laboratory.

Currently available, third-generation analytic systems are based on the two fundamental concepts: *consolidation*, that is, the combination of different techniques or strategies in several interconnected instruments or one single instrument, which represents a technological evolution of the unique general laboratory; and *integration*, which results from connecting these instruments with pre-analytical and post-analytical devices.

Totally automated third-generation analytic systems can now perform most of the "dirty work" with improved efficiency, reliability and safety, enabling the autoimmunologist to focus on result validation and narrative reporting for clinical interpretation.

The authors of the paper provide examples of automation in the autoimmunology laboratory based on the three following models.

Automated indirect immunofluorescence and the changes in the two-step strategy for detection of autoantibodies

The automated platforms currently available for indirect immunofluorescence (IIF) (Table 1) – the gold standard technique for detecting anti-nuclear antibodies, anti-neutrophil cytoplasmic antibodies and anti-dsDNA antibodies – efficiently discriminate between ANA-positive and negative samples; their data acceptably correlate with data from non-automated microscope reading. Furthermore, these automated platforms generate quantitative data.

These features allow a screening-based selection of the positive samples followed by the identification of specific antibodies to confirm screening results and classify autoimmune diseases. The relevant protocols can be completed through the fully automated process of *reflex testing*, which also permits the practice of telepathology, and in turn remote diagnosis, consultations and education.

Table 1: Currently available automated IIF platforms

System	Screening neg/pos	Patterns (no; type)	Company
Aklides	Yes	6-H, S, N, C, ND, Cy	Medipan, Germany
EUROPattern	Yes	7-H, S, N, C, ND, NM, Cy	Euroimmun, Germany
Zenit G-Sight	Yes	5-H, S, N, C, M	A. Menarini Diagnostics, Italy
NOVA view	Yes	5-H, S, N, C, ND	Instrumentation Laboratories, Spain
Helios	Yes	–	Aesku Diagnostics, Germany
Image navigator	Yes	–	ImmunoConcepts, USA

H, homogeneous; S, speckled; N, nucleolar; C, centromere; ND, nuclear dots; NM, nuclear membrane; Cy, cytoplasmic

Automated monoplex immunoassays and the reduction of turnaround time

The identification in clinical practice of life-threatening autoimmune conditions or diseases causing a rapid loss of organ function has entailed the need to rely on rapid etiological and differential diagnosis in order to promptly initiate specific therapies.

As opposed to the time-consuming combination of bimanual IIF and immunoassays (IMAs), automated IIF and third-generation monoplex IMA systems* allow the rapid detection of autoantibodies, which can be crucial in specific clinical settings like the intensive care unit, and are suitable for the purposes of monitoring therapy and establishing a fast diagnosis, owing to the now shorter hospital stays.

Automated multiplex IMAs and autoantibody profiling

Multiplex proteomic technology, such as the use of microarrays**, is a valuable tool in immunodiagnostics: it is capable of simultaneously detecting different autoantibodies related to AIDs and, as opposed to monoplex immunoassays, is not burdened by time expenditure, high volumes of samples and reagents, harmonization issues, etc.

Through antibody profiling, and monitoring of trends and evolution over time, this technology has diagnostic and prognostic relevance.

The described changes will likely lead, among others, to the replacement of subjective and semi-quantitative methods with more objective and precise assays, reducing analytical variability and enabling early and differential diagnosis as well as treatment customization. As **Tozzoli et al.** mentioned in a previous review[2], a useful application of antibody profiling through several immunoassays concerns the diagnosis of autoimmune co-morbidities (overlap syndromes and multiple autoimmune syndromes), especially when these diseases present in clinically incomplete forms.

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* These include *Zenit RA*, a fully automated immunoassay analyzer by **A. Menarini Diagnostics**, which operates through magnetic microparticles and chemiluminescence detection, producing analytical data with high precision and rapidity.

** *Zenit AMiDot* by **A. Menarini Diagnostics** are pre-designed planar arrays for a panel of autoimmune diseases, that feature the traits of multiplex immunoassays.

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Latest Marketing & Scientific Events

Athens, host city for the 11th International Symposium on Autoimmunity

Fully sponsored by **A. Menarini Diagnostics**, the symposium will be chaired by Nicola Bizzaro and will focus on ***Critical tests and critical values in autoimmune testing***, with a glance at personalized medicine and a final discussion on the still relevant issue of harmonization (see the Scientific Program below). It will be held **November 24-25** at the **InterContinental Athenaeum Hotel in Athens**.

11th A.Menarini Diagnostics International Symposium on Autoimmunity

Scientific Program

November 24th

18.00	Foreword: N. Bizzaro *(Italy)*, M. Donnini *(Italy)*
18.10	Opening lecture: **New diagnostic markers in Sjögren's syndrome** A. Tzioufas *(Greece)*
19.00	Welcome reception

November 25th

SESSION 1 - Personalized medicine in autoimmune diseases

Chairmen: C. Selmi *(Italy)*, Y. Shoenfeld *(Israel)*

9.00	**What can we learn from large databases? Lessons from autoimmunity** H. Amital (*Israel)*
9.30	**Personalized autoantibodies: the case of citrullinated peptides** H.U. Scherer *(The Netherlands)*
10.00	**Personalized medicine: from gender to genotyping** C. Selmi (*Italy)*
10.30	**Discussion**
10.40	*Coffee break*

SESSION 2 - Diagnostic issues

Chairmen: H. Amital *(Israel)*, X. Bossuyt *(Belgium)*

11.10 **Biosensor for total antinuclear antibody determination at the point-of-care**
K.N. Konstantinov *(USA)*

11.40 **Screening profiles and disease-oriented profiles to diagnose autoimmune rheumatic diseases**
X. Bossuyt *(Belgium)*

12.10 **Monitoring treatment with biological drugs: which is the role for the Lab?**
D. Pascual-Salcedo *(Spain)*

12.40 **Discussion**

12.50-14.00 *Light lunch*

SESSION 3 - Immunofluorescence: old but still useful

Chairmen: N. Bizzaro *(Italy)*, E. Chan *(USA)*

14.00 **Subcellular rods/rings as targets of autoantibodies in HCV therapy**
E. Chan *(USA)*

14.30 **Analysis of DFS70 pattern and impact on ANA screening using a novel DFS70 Knock Out HEp-2 cell substrate**
K. Malyavantham *(USA)*

15.00 **Immunofluorescence and the discovery of liver autoantibody targets**
D. Vergani *(UK)*

15.30 **Discussion**

15.40 *Coffee break*

SESSION 4 - Autoimmune liver diseases

Chairmen: D.P. Bogdanos *(Greece)*, D. Vergani *(UK)*

16.10 **Immunofluorescence vs molecular assays**
L. Muratori *(Italy)*

16.40 **In-house vs commercial methods: myths and reality**
D.P. Bogdanos *(Greece)*

17.10 **Translation of autoantibody results: the point of view of the clinician**
G. Mieli-Vergani *(UK)*

17.40 **Discussion**

SESSION 5 - Harmonization in autoimmune diagnostics (a talk with the experts)

18.00 -19.00

Chairman: N. Bizzaro *(Italy)*

Discussants: D.P. Bogdanos *(Greece)*, X. Bossuyt *(Belgium)*, E. Chan *(USA)*, G. Mieli-Vergani *(UK)*, C. Selmi *(Italy)*, Y. Shoenfeld *(Israel)*

Attendees are advised that a smartphone application will be made available to be used during the Symposium (free wi-fi connection on the spot)

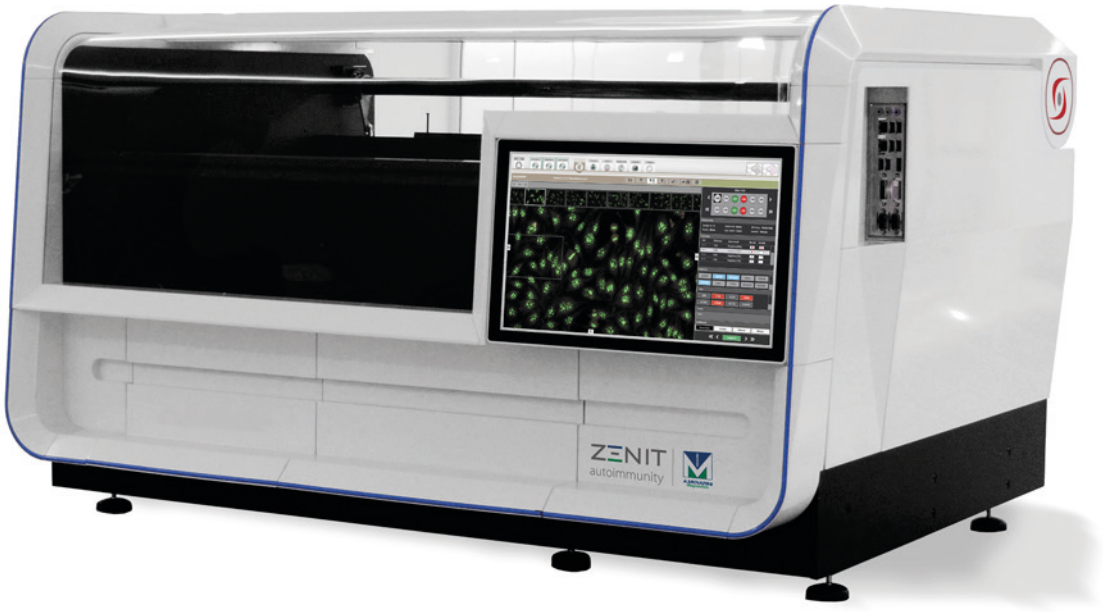
Clinical & basic research in a joint event

The 12th International Congress on Systemic Lupus Erythematosus (LUPUS 2017) and the 7th Asian Congress on Autoimmunity (ACA 2017) will be held together in Melbourne, Australia, 26-29th March 2017. This joint event is meant to enhance the connection between clinical and basic research by focusing on translational research in SLE and autoimmunity. This year's topic will be "Microbiome, nutrition and autoimmunity".

Next congress on Controversies in Rheumatology Autoimmunity (CORA) to be held in Italy

The 4th International CORA will feature debate by world experts on the hottest topics and controversial issues in rheumatology, autoimmunity, clinical immunology and related fields. It will be held in Bologna from 9-11th March 2017.

To every question only **One** answer



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