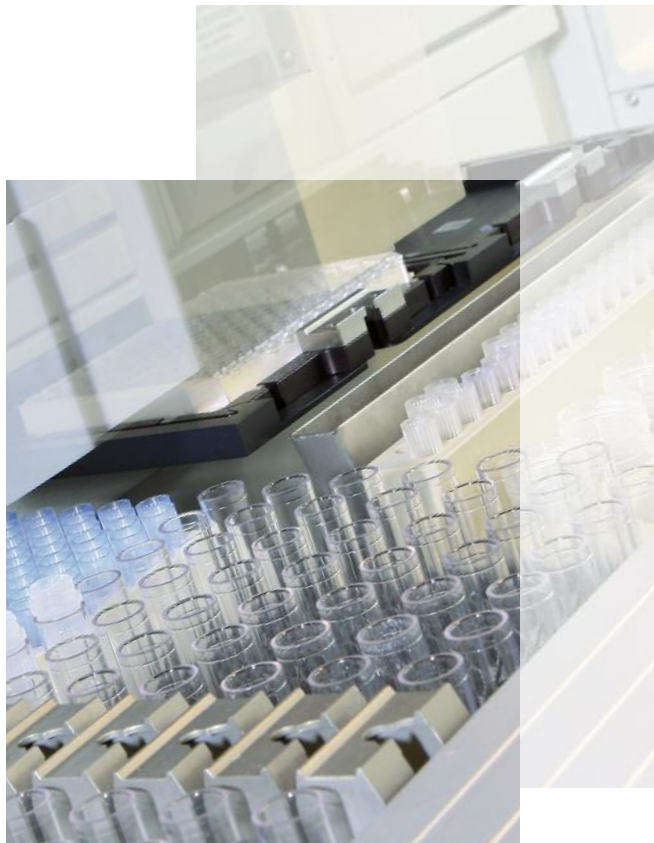


## **Autoimmune diagnostics**

**A comprehensive product line for  
the detection of autoantibodies**



# Autoimmune diagnostics

Autoimmune diseases are chronic inflammatory processes with an indeterminate etiology. They may be either organ-specific, or of a systemic nature; they affect preferentially females, and correlate with the production of disease-associated autoantibodies. The impact of autoimmune diseases on the cost of health care and of adequate patient therapies makes accurate and reliable methods for the diagnosis, prognostication, and monitoring of autoimmune diseases absolutely necessary.

**IBL offers a comprehensive autoantibody product line, corresponding to the following diseases:**

- Myasthenia gravis
- Rheumatic diseases
- Vasculitis / Nephritis
- Thrombosis
- Celiac disease
- Thyroid diseases
- Diabetes



## IBL proprietary features

- We offer acetylcholine receptor autoantibody assays which are the only commercial assays worldwide to use acetylcholine receptors from human muscle
- We are the leading manufacturer of dsDNA-Ab Farr RIA, which has been proposed as the “gold” standard for dsDNA-Ab testing
- The 2<sup>nd</sup> generation ELISA for detection of CCP antibodies, which are often found in a very early stage of rheumatoid arthritis, has a higher sensitivity and specificity in comparison to rheumatoid factors alone

## Myasthenia gravis

Myasthenia gravis (MG) is an acquired disorder of neuro-muscular transmission and is associated with abnormal muscle weakness and exertion fatigue. Myasthenia gravis can occur anywhere from early childhood to old age; its prevalence is about 5 per 100,000. Autoantibodies against acetylcholine receptors (ARAb) along the postsynaptic membrane are responsible for the muscle weakness and fatigue in MG.

The prognosis for MG patients without proper treatment is extremely poor. However, when diagnosed early enough, this disease can be treated, allowing patients to lead nearly normal lives.

**The determination of acetylcholine receptor autoantibodies (ARAb) is the “gold” standard for diagnosis and management of myasthenia gravis**

## Autoantibody assays

**ARAb binding RRA  
ARAb blocking RIA**

# Rheumatic diseases

According to the World Health Organization (WHO), rheumatic diseases form the most widespread health care problem in the world. The primary rheumatic diseases include rheumatoid arthritis (inflammation of

various joints), and inflammatory diseases in connective tissues, such as systemic lupus erythematosus, Sjögren's syndrome, systemic sclerosis, dermatomyositis, and mixed connective tissue diseases.



## Autoantibody ELISAs

One major laboratory screening test for detection of systemic rheumatic diseases is the detection of antinuclear antibodies (ANA). Subsets of these antinuclear antibodies can be used for differential diagnosis of specific autoimmune diseases.

### ANA / ENA Screening and Profile testing ANA Differentiation

Autoantibody (Ab)	Clinical manifestations
dsDNA-Ab; ssDNA-Ab	Active / inactive SLE
Histone-Ab	Medicine induced SLE
CENP-B-Ab	CREST syndrome / Scleroderma
Jo-1-Ab	Polymyositis / Dermatomyositis
Sm-Ab	SLE
U1-RNP-Ab	MCTD
Ro/SS-A-Ab; La/SS-B-Ab	Neonatal LE / Sjögren's syndrome / SLE
Sci-70-Ab	Scleroderma

Note: dsDNA-Ab Farr RIA also available

## ELISA testing for RA

Rheumatoid arthritis (RA) is a common, systemic autoimmune disease characterized by chronic inflammation of the synovial joints. Early diagnosis of RA is critical in preventing irreversible joint damage. Antibodies to cyclic citrullinated peptides have been established as the marker of choice for diagnosing early RA.

**Cyclic citrullinated peptides (CCP)-Ab**  
**Rheuma factors (RF)**

# Vasculitis

Vasculitis is a general term for a group of diseases that are characterized by inflammatory destruction of blood vessels (both arteries and veins). Special types of vasculitis are associated with the occurrence of antineutrophil cytoplasmic antibodies (ANCA) which are widely used as diagnostic markers for Wegener's granulomatosis (WG), microscopic polyangiitis (MPA), Churg-Strauss syndrome (CSS), and idiopathic rapidly progressive glomerulonephritis (iRPGN).

These antibodies act against non-nuclear cytoplasm in white blood cells and occur in two primary forms: cANCA and pANCA. The primary target antigen for cANCA is proteinase 3 (PR3), for pANCA it is myeloperoxidase (MPO).

Goodpasture's syndrome can elicit symptoms very similar to those of ANCA-associated vasculitis. Diagnostic indicators are antibodies against glomerular basement membrane (GBM) of the kidney.

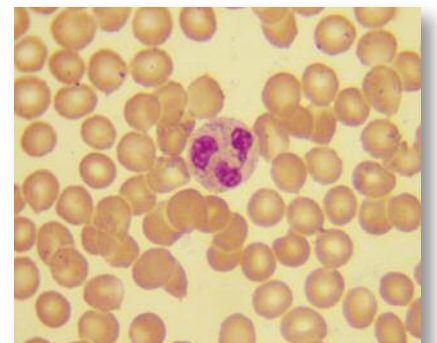


## Autoantibody ELISAs

Autoantibody (Ab)	Clinical manifestations
cANCA (PR3)	Wegener's granulomatosis (up to 80 %)
pANCA (MPO)	Microscopic polyangiitis (up to 80 %) / Churg-Strauss syndrome (60 %)
GBM-Ab	Goodpasture's syndrome

## Also available ELISAs

Vasculitis screening  
 Cathepsin-Ab  
 Elastase-Ab



Neutrophil granulocyte.

# Thrombosis / APS

Anti-phospholipid syndrome (APS) is one of the most frequent autoimmune diseases. APS can cause clinical conditions such as venous or arterial thrombosis, recurrent spontaneous abortion, or neurological complications. Cardiolipin (CL) is the most common acid phospholipid; autoantibodies to cardiolipin are characteristic of APS.

Autoantibodies associated with APS act not only against CL and similar phospholipids, but also against phospholipid/protein complexes. The co-antigen  $\beta$ 2-glycoprotein 1 ( $\beta$ 2-GP1) has been identified as both natural and essential for CL autoantibodies. CL and  $\beta$ 2-GP1 autoantibodies have been adopted into the classification criteria for the diagnosis of APS (Miyalis et al., 2006).



## Autoantibody ELISAs

**Cardiolipin-Ab**  
 **$\beta$ 2-Glycoprotein-Ab**  
**Phospholipid screening**  
**Phospholipid-8-Profile**

**Annexin V-Ab**  
**Thrombin-Ab**  
**Prothrombin-Ab**  
**Ethanolamine-Ab**

**Inositol-Ab**  
**Serin-Ab**  
**Phosphatidic acid-Ab**  
**Serin-Prothrombin-Ab**

# Celiac disease

Celiac disease (CD), also known as gluten-sensitive enteropathy, is an autoimmune disorder with a prevalence of 1 %. The majority of these patients remain undiagnosed.

Transglutaminase IgA tissue antibodies (tTG IgA) are well established as a specific indicator for the diagnosis of celiac disease.

Recently the use of deamidated gliadin peptides (modified gliadin peptides or MGP) in immunoassays

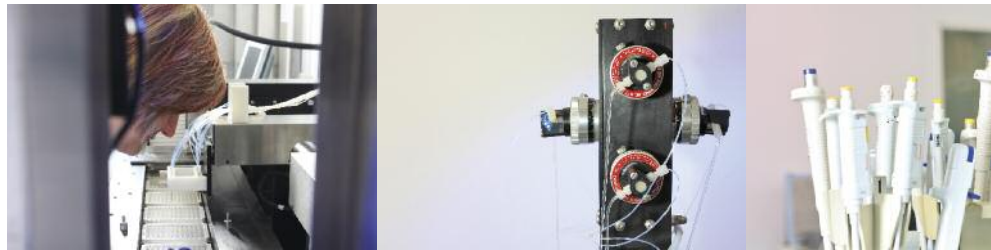
has significantly improved the effectiveness of gliadin antibodies in diagnosis of celiac disease. For example IgG antibodies to synthetic deamidated gliadin peptides are highly sensitive and specific for identifying IgA anti-transglutaminase negative celiac patients (approx. 2 % of celiac patients suffer from IgA deficiency).

The tTG new generation assays use a unique antigen approach derived from recent scientific discoveries. Due to its special formulation tTG

new generation is able to detect three kinds of celiac disease related antibodies.

- Antibodies to tTG
- Antibodies to deamidated Gliadin peptides
- Antibodies to Neo-Epitope (human tissue transglutaminase cross-linked with deamidated gliadin)

With this approach the tTG new generation is able to diminish the amount of undetected celiac disease patients.

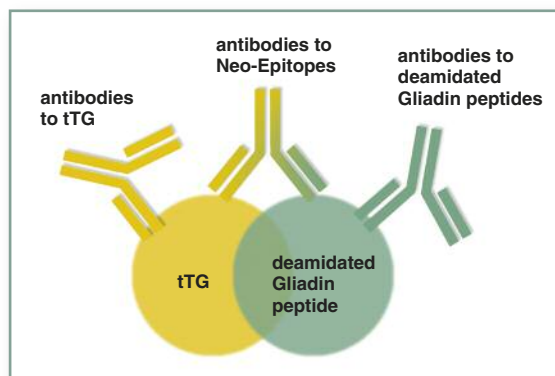


## Autoantibody ELISAs

**Tissue transglutaminase-Ab (new generation)**

**Gliadin-Ab**

**Modified gliadin peptide (MGP)-Ab**



Different types of antibodies in the tTG new generation test.



Grain is a significant source of gluten.

# Thyroid diseases

Autoimmune thyroiditis (AIT) is one of the most common human autoimmune diseases. Clinical manifestations are extremely variable, beginning with hypothyroid and continuing to hyperthyroid symptoms. Thyroid peroxidase (TPO) represents the major autoantigen in AIT. On this basis, there is a moderate positive correlation between antibody titers for TPO and a risk for future hypothyroidism.

Graves' (or Basedow's) disease (GD) is the only autoimmune disease caused by stimulation of the target organ. Clinical manifestations are hyperthyroidism and often endocrine ophthalmopathy. TSH receptor autoantibodies should be measured for a diagnosis of GD.

## Autoantibody ELISAs

Thyroid Peroxidase (TPO)-Ab  
 Thyroglobulin (Tg)-Ab  
 TSH receptor-Ab



# Miscellaneous

## Autoantibody ELISAs

Autoantibody (Ab)	Disease
<b>ASCA (Saccharomyces cerevisiae)</b> ASCA screening	Inflammatory bowel diseases (IBD)
<b>Insulin-Ab</b> <b>Islet cell-Ab</b> <b>GAD (Glutamic acid decarboxylase)-Ab</b> <b>IA2-Ab</b>	Diabetes
<b>Intrinsic factor-Ab</b> <b>Parietalcell-Ab</b>	Pernicious anemia (Biermer's anemia)
<b>LC1 (Liver cytosol type 1)-Ab</b> <b>LKM-1 (Liver / Kidney microsomes)-Ab</b>	Autoimmune hepatitis (AIH)
<b>AMA-M2 (Mitochondrial M2)-Ab</b>	Primary biliary cirrhosis (PBC)
<b>Spermatozoa-Ab</b>	Infertility

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