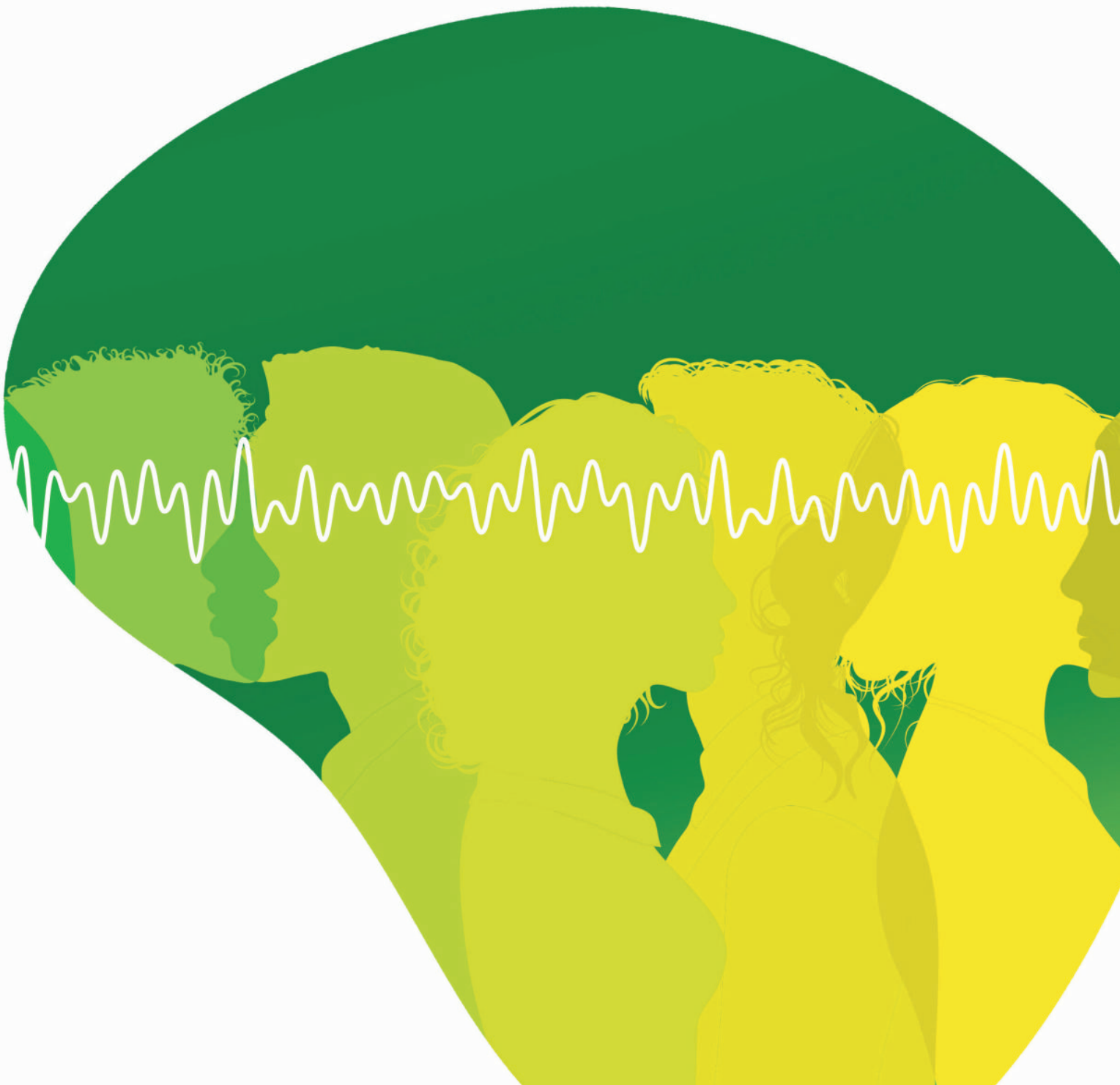


Together
at the pulse of
neurology.





Together at the pulse of neurology

Neurological disorders can affect the brain, spinal cord and nerves. They are triggered, for example, by autoantibodies, neurodegenerative processes or infectious agents and can manifest as autoimmune encephalitis, Alzheimer's disease or neuroborreliosis with a variety of clinical signs and symptoms.

In order to be able to help patients in the best possible way, a fast and accurate diagnosis is important. As one of the world's leading manufacturers of medical laboratory diagnostics, Euroimmun develops and produces

state-of-the-art test systems to aid in the diagnosis of diseases, as well as innovative automation and software solutions for effective and reliable processing and evaluation of such tests.

Euroimmun has its finger on the pulse of neurology through active basic research, a comprehensive and unique range of tests for the detection of neurobiomarkers, which is constantly being expanded on the basis of this research, and a service portfolio characterised by complete solutions for every laboratory.

Research

Discover our contribution to research

The Euroimmun-affiliated Institute for Experimental Immunology conducts basic research and collaborates with universities, clinics and renowned research institutes worldwide. With a focus on the patient, it drives the discovery of neurological structures targeted by autoantibodies and develops innovative methods to identify such antibodies.

For example, antibodies against septin-3¹ and RGS8² have only recently been described in patients with paraneoplastic cerebellar syndromes and antibodies against septin-7³ in encephalopathy patients with encephalopathy with prominent neuropsychiatric features.

The identification of novel autoantigens also provides the basis for the development of new test systems. Cell-based assays (CBAs) play an important role in this context. The recombinant-cell (RC) IFA technology established by Euroimmun, which is based on transfected human cells, allows monospecific detection of autoantibodies. Detection by CBA is already a mandatory part in serological differential diagnostics of various neurological autoimmune diseases.

Euroimmun produced the first commercial CBAs such as the Anti-Glutamate Receptor (Type NMDA) IIFT and the Anti-Aquaporin-4 IIFT to support the diagnosis of anti-NMDA receptor encephalitis and neuromyelitis optica spectrum diseases (NMOSD), respectively.

Another major focus of the Institute is the cloning and expression of recombinant antigens for use in Euroimmun test systems. For example, the results have been particularly useful in our extensive product portfolio for differentiated Lyme disease diagnostics, where they have led to the inclusion of recombinant VlsE in the Anti-Borrelia plus VlsE ELISA, significantly increasing the sensitivity of the test for the detection of human antibodies against Borrelia.

Euroimmun made a major contribution to the diagnostics of Alzheimer's disease with the development of the first commercial ELISA for the detection of beta-amyloid (1-40) (A β 1-40) and the resulting establishment of the A β 1-42/A β 1-40 quotient for the accurate identification of amyloid pathology.⁴ The first international guideline for the standardised handling of CSF samples⁵, which was developed with the participation of Euroimmun, is a milestone in preanalytical diagnostics for Alzheimer's disease.



Spectrum

Discover our range of assays for neurobiomarkers

Euroimmun's neurodiagnostic portfolio is uniquely broad and diverse. It includes antigen- and antibody-based assays for diagnostics and research in areas such as CNS infections, neurological autoimmune diseases and neurodegeneration.

Autoimmune diseases of the nervous system

Our diagnostic portfolio:

- Tests for the detection of more than 60 autoantibodies against neural structures
- Support for the diagnosis of autoimmune encephalopathies, neurological paraneoplastic syndromes, demyelinating diseases, autoimmune neuropathies, myasthenic syndromes and stiff-person syndrome
- Comprehensive IFA screening tests for neural autoantibodies based on tissue sections of cerebellum, hippocampus, nerves and intestine (rat, monkey) as gold standard
- Innovative CBAs for monospecific detection of autoantibodies against cell surface proteins such as NMDA, AMPA-1/2 and GABAB receptors (R), LGI1, CASPR2, DPPX, IgLon5, AQP-4, AChR, MuSK, MOG and many more
- Immunoblots (EUROLINE) for monospecific detection of antibodies against intracellular antigens such as amphiphysin, Ri, Yo, Hu, SOX1 and others

Our research portfolio:

- Tests for research parameters such as anti-flotillin-1/2, anti-contactin-1, anti-neurofascin 155 and 168, anti-adenylate kinase 5 antibodies

Infectious diseases of the nervous system

Our diagnostic portfolio:

- ELISAs for the detection of intrathecal antibodies against *Borrelia burgdorferi*, *Toxoplasma gondii*, CMV, EBV, HSV, VZV, measles virus, rubella virus, mumps virus and TBE virus, including the only CE-marked ELISA for neurosyphilis diagnostics
- ELISAs for the detection of the chemokine CXCL13 in CSF, an activity marker for the differentiation between acute and past neuroborreliosis and a marker for monitoring the disease course after therapy
- Convenient evaluation of CSF diagnostics by means of EUROLabCSF, a software for automated calculation of the CSF/serum quotient CSF/serum control pairs for internal quality assurance that are interchangeable between lots

Neurodegenerative diseases

Our diagnostic portfolio:

- Secure analysis of the established CSF biomarkers beta-amyloid (1-40), beta-amyloid (1-42), total tau and pTau(181) using ELISA or ChLIA
- Determination of the A β 1-42/A β 1-40 quotient for a more accurate identification of amyloid pathology and differentiation between Alzheimer's disease and vascular dementia
- Test for molecular genetic detection of APOE alleles ϵ 2, ϵ 3 and ϵ 4 to support the diagnosis of Alzheimer's disease
- ELISA for the detection of phosphorylated neurofilament heavy chain (pNf-H) in CSF and serum for routine diagnostics in suspected amyotrophic lateral sclerosis (ALS)

Our research portfolio:

- Tests for the detection of BACE1, neurogranin, alpha-synuclein as research parameters in the context of neuronal damage



Solutions

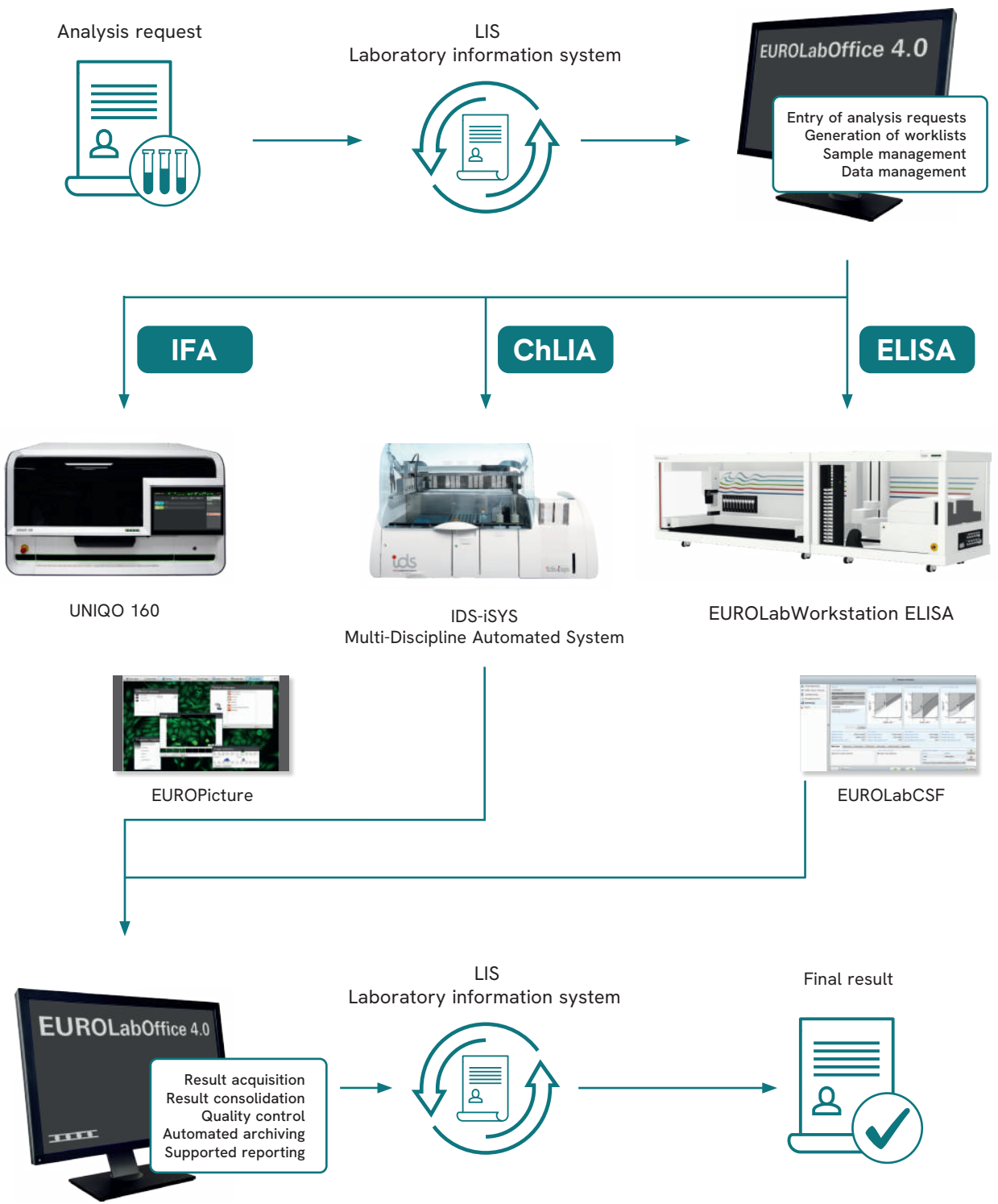
Discover our solutions

Euroimmun offers a wide range of technologies. With the aim of helping diagnostic laboratories to maximise the efficiency of their workflows and to achieve maximum standardisation and reliability of their analyses, Euroimmun offers flexible automation solutions for all its test systems, tailored to different sample throughputs and laboratory sizes.

Dedicated and experienced field and technical support personnel are available to assist customers with any questions they may have regarding the use of test systems, equipment and software.

At the Euroimmun Academy, qualified specialists in medical laboratory diagnostics provide intensive theoretical and practical training in various diagnostic areas and methods. In addition, the accredited Institute for Quality Assessment, affiliated to Euroimmun, offers quality assessment schemes to help maintain high quality standards in external laboratories.

Euroimmun complete solutions (a selection)



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5. Hansson O, et al. The Alzheimer's Association international guidelines for handling of cerebrospinal fluid for routine clinical measurements of amyloid beta and tau. *Alzheimers Dement* 17(9):1575-1582 (2021).

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