Anti-Aquaporin-4 IIFT

- BIOCHIP Mosaic for the highly specific detection of antibodies against AQP-4 using a recombinant cell line
- Recommended detection method according to international diagnostic criteria for NMO/NMOSD
- Automated evaluation possible (EUROPattern)

### Technical data

- **Antigen substrate**: Transfected and control-transfected cells (EU 90)
- **Sample material**: Serum, plasma or CSF
- **Sample dilution**: Serum or plasma from 1:10; CSF samples 1:1 (undiluted)
- **Reagents**: Ready for use, with the exception of the PBS Tween buffer
- **Test procedure**: 30 min (sample) / 30 min (conjugate), room temperature
- **Microscopy**: Objective: 20x (visually); 10x (EUROPattern)
  - Light source: EUROIMMUN LED, EUROStar Bluelight or mercury vapour lamp, 100W
- **Stability**: 18 months from the date of manufacture at +2°C to +8°C
- **Test kit format**: 10 slides each with 3, 5 or 10 test fields
- **Order no.**: FA 1128-####-50
- **Related products**:
  - FC 1128-####-50 Anti-Aquaporin-4 IIFT EUROPattern (AQP-4- and control-transfected cells)
  - FA 1111-####-17 IIFT: Neurology Mosaic 17 (cerebellum (monkey), cerebrum (monkey), optic nerve (monkey), AQP-4- and control-transfected cells)
  - FA 1128-####-1 IIFT: NMOSD Screen 1 (AQP-4-, MOG- and control-transfected cells)

### Clinical significance

The inflammatory autoimmune disease neuromyelitis optica (NMO, opticospinal encephalomyelitis, Devic’s syndrome) is a rare form (around 1%) of the group of acquired demyelinating diseases of the central nervous system (CNS) with degradation of the insulating sheath of at least one optical nerve (neuritis nervi optici) and at the same time or a few months later the spinal cord (longitudinal extensive (three or more segments) transverse myelitis, LETM). Highly specific serum autoantibody markers are found very frequently in NMO, while they are not detected in multiple sclerosis (MS) patients or in healthy subjects. The protein aquaporin-4 (AQP-4) was later identified as the target antigen. NMO was previously regarded as a localised special form of multiple sclerosis (MS). According to current knowledge it is considered a fundamentally separate disease with regard to the pathogenesis. Without adequate therapy half of the patients become blind in one or both eyes or cannot walk without support within 5 years. Prognosis depends on the number and severity of flare-ups during the first two years. The 5-year survival rate is given as 70%, with the cause of death usually being neuropathic breathing insufficiency. Moreover it could be shown that aquaporin-4 antibodies are also detectable in patients with isolated LETM and patients with isolated recurring ON (NMO spectrum diseases (NMOSD)). Owing to the strong association between aquaporin-4 autoantibodies and NMO, which has been repeatedly demonstrated, it is assumed that in the case of seropositive LETM and ON, these are incomplete forms of NMO.

### Diagnostic application

Autoantibodies against AQP-4 are highly specific for neuromyelitis optica (NMO, Devic’s syndrome), an inflammatory demyelinating disease of the central nervous system, and are a constituent of the diagnostic criteria (according to Wingerchuk et al). The EUROIMMUN Anti-Aquaporin-4 IIFT enables sensitive and specific determination of the antibodies and therefore the serological delimitation of prognostically poor NMO from classic MS.
Test evaluation

Fluorescence pattern (positive reaction): Antibodies against aquaporin-4 (AQP-4) react with the transfected cells of the test substrate. They cause a smooth fluorescence in the cytoplasm, the cell nuclei are only weakly stained.

BIOCHIP arrangement

The Anti-Aquaporin-4 IIFT is available in three formats: slides with 3, 5 or 10 fields. One test field contains two BIOCHIPS.

Reference range

Titer 1: <10 (serum, plasma; IgG) or titer 1:1 (CSF; IgG) negative.

Clinical sensitivity and specificity:

<table>
<thead>
<tr>
<th>Panel</th>
<th>Sample material</th>
<th>n</th>
<th>Anti-AQP-4 IIFT</th>
<th>Antibody positive</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Patients with neuromyelitis optica</td>
<td>Serum/plasma</td>
<td>155</td>
<td>120</td>
<td>77.0</td>
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<td></td>
<td>CSF</td>
<td>26</td>
<td>11</td>
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<td>Patients with NMO spectrum diseases (NMOSD; LETM or recurrent ON)</td>
<td>Serum/plasma</td>
<td>19</td>
<td>11</td>
<td>58.0</td>
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<tr>
<td></td>
<td>CSF</td>
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<td>10</td>
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<tr>
<td>Clinical sensitivity</td>
<td>Serum/plasma</td>
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<td>131</td>
<td>75.0</td>
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<tr>
<td></td>
<td>CSF</td>
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<tr>
<td>Patients with multiple sclerosis (MS)</td>
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<td>1</td>
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<td></td>
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<tr>
<td></td>
<td>CSF</td>
<td>28</td>
<td>0</td>
<td>100</td>
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<tr>
<td>Patients with NMO spectrum diseases (NMOSD; transverse myelitis, ON)</td>
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<td>Patients with anti-neural antibodies-associated neurological syndromes</td>
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<td>Healthy blood donors</td>
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<td>Clinical specificity</td>
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<td>CSF</td>
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Literature