ECN information on routine diagnostic services in Europe

EUROPEAN COMPLEMENT NETWORK LABORATORIES OFFERING _EXTERNAL_ ROUTINE DIAGNOSTIC SERVICES FOR ELABORATED COMPLEMENT ANALYSES

The principles of this service are based on:
- The laboratory is offering an *unlimited service to all customers*, not only Europeans, of clinical complement diagnostics for routine diagnosis and prognostic investigations _beyond_ the traditional complement analyses performed in most complement laboratories (*i.e.* C3, C4, CH50/total complement activity/ WIELISA and complement activation products).
- The laboratory should supply diagnostic tests including complement quantification, functional analysis and/or genetics, based on screening results obtained in the local complement laboratory.
- The full repertoire of available analyses and other services of the laboratories, like accreditation and analytes under quality control in external quality assessment (EQA), are presented on the separate website listed for each of the laboratories.
- The laboratories offering their service will be selected by the ECN Board and pasted on the ECN website free of charge.
- The laboratories are responsible for continuous updates of their activities to the ECN Board Secretary, who will update the website after consulting the Board.

Complement Service Laboratories – _Disclaimer:_

- By using this webpage of the European Complement Network (ECN) listing the ‘Complement Service Laboratories’, you accept this disclaimer in full; accordingly, if you disagree with this disclaimer or any part of this disclaimer, you must not use the information presented on this webpage.
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**Overview**

The participating laboratories are listed based alphabetically, per country and next per city.

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Austria

Country: Austria
Name of Laboratory: Würzner-Lab
Website of Laboratory: [https://www.i-med.ac.at/hygiene/forschungwuerznerstartseite.html.de](https://www.i-med.ac.at/hygiene/forschungwuerznerstartseite.html.de)

Academically responsible
  Name: Reinhard Würzner
  Position: Assoc. Prof.
  E-mail: reinhard.wuerzner@i-med.ac.at
  Phone: +43 512 9003 70707

Technically/administrative responsible
  Name: 
  Position: 
  E-mail: 

Shipping address for samples: Schöpfstr. 41, A-6020 Innsbruck, Austria

Analyses available

1. **Quantification** of the following components:
   C6, C7, C7 M (allotype specific), TCC (all by ELISA)

2. **Functional analysis** of the following components: n.a.

3. **Autoantibodies** to the following components (including NeFs): n.a.

4. **Genetic sequence and expression based analyses**
   Specific genes: n.a.
   Disease packages: n.a.
   State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: n.a.

Prices and response time

X Prices and response time will be available from the technical/administrative responsible on request. Normally, determination is free on the basis of a scientific collaboration.
Denmark

Country: Denmark
Name of Laboratory: Department of Clinical Immunology, Section 7631, Rigshospitalet, Copenhagen
Website of Laboratory: www.regionh.dk/blodbanken/afdelingen/enheder-paa-rigshospitalet/Sider/vaevstypelaboratorie.aspx

Academically responsible
Name: Peter Garred
Position: Professor
E-mail: peter.garred@regionh.dk
Phone: +45 3545 7631

Technically/administrative responsible
Name: Hans O. Madsen
Position: Msc.
E-mail: hans.o.madsen@regionh.dk
Phone: +45 3545 7631
Name: Jakob T. Bay
Position: MD, Phd
E-mail: jakob.thaning.bay@regionh.dk
Phone: +45 3545 7631

Shipping address for samples:
Department of Clinical Immunology, Section 7631
Rigshospitalet
Ole Maaloeesvej 26
2200 Copenhagen N
Denmark

Analyses available

1. Quantification of the following components:
   MBL

2. Functional analysis of the following components:

3. Autoantibodies to the following components (including NeFs):

4. Genetic sequence and expression based analyses
   Specific genes:
   MBL2
   Disease packages:
Complement/aHUS package including the following genes:
ADAMTS13
ARMS2
C1QA / C1QB / C1QC
C1R / C1S
C2
C3
C3AR1
C4
C4B
C4BPA
C4BPBC5
C5AR1
C6
C7
C8A / C8B / C8G
C9
CD46
CD55
CD59
CFB
CFD
CFHCFHR1
CFHR2
CFHR3
CFHR4
CFHR5
CFI
COLEC10COLEC11
COLEC12
CR1
CR2
DGKE
FCN1
FCN2
FCN3
HTRA1
MASP1
MASP2
MBL2
PTX3
SERPING1
THBD
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:

NGS – Ion Torrent 5

Prices and response time are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

Prices and response time will be available from the technical/administrative responsible on request.
France

Country: FRANCE
Name of Laboratory: Laboratoire d’Immunologie – CHU Grenoble
Website of Laboratory: http://biologie.chu-grenoble.fr/immunologie

Academically responsible
Name: DUMESTRE-PERARD Chantal and DEFENDI Federica
Position: associate professor and biologist
E-mail: cdumestre-perard@chu-grenoble.fr, fdefendi@chu-grenoble.fr
Phone: +33 4 76 76 50 15 and +33 4 76 76 63 31

Technically/administrative responsible
Name: LAVAITTE Amandine
Position: medical secretary
E-mail: alavaitte@chu-grenoble.fr
Phone: +33 4 76 76 54 16

Shipping address for samples:
Laboratoire d’Immunologie, CHU de Grenoble
Institut de Biologie et Pathologie, R+1, Parvis Belledonne,
Boulevard de la Chantourne
38700 La Tronche, France

Analyses available

1. Quantification of the following components:
   - C1q (commercial Siemens nephelometry)
   - C3 (commercial Siemens nephelometry)
   - C4 (commercial Siemens nephelometry)
   - C5 (commercial Siemens nephelometry)
   - Factor B (commercial Siemens nephelometry)
   - Properdin (in house Elisa)
   - MBL antigen (in house Elisa)
   - C1 inhibitor antigen (commercial Siemens nephelometry)
   - Factor H antigen (in house Elisa)
   - Anti-factor H antibodies (in house Elisa)
   - Factor I antigen (in house Elisa)
   - C6 to C9 antigen (in house Elisa)
   - C4bp (in house Elisa)
2. **Functional analysis** of the following components:
   - CH50 classical pathway (CH50) (in house haemolytic test)
   - CH50 alternative pathway (AP) (in house haemolytic test)
   - C4 haemolytic (in house haemolytic test)
   - C2 haemolytic (in house haemolytic test)
   - MBL activity (in house Elisa)
   - C1 inhibitor activity (in house kinetic spectrophotometry)
   - Factor H activity (in house haemolytic test)

3. **Autoantibodies** to the following components (including NeFs):
   - Anti-C1 inhibitor antibodies (in house Elisa)
   - Anti-C1q antibodies (in house Elisa)
   - C3 nephritic factor (in house haemolytic test and in house immunoelectrophoretic test)
   - Anti-factor H antibodies (in house Elisa)

4. **Genetic sequence and expression based analyses**
   Specific genes: n.a.
   Disease packages: n.a.
   State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: n.a.

**Prices and response time** are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

X Prices and response time will be available from the technical/administrative responsible on request.

X Prices and response time is found on the laboratory’s website: https://www.monkiosquesante.org/KS_EXP/LivretBio
Germany

Country: Germany
Name of Laboratory: Dept. of Immunochemistry, Laboratory of Complement Diagnostics
Website of Laboratory: [https://www.klinikum.uni-heidelberg.de/Komplementdiagnostik.100037.0.html](https://www.klinikum.uni-heidelberg.de/Komplementdiagnostik.100037.0.html)

Academically responsible
Name: Prof. Dr. Michael Kirschfink
Position: Head
E-mail: kirschfink@uni-hd.de
Phone: +496221 564076

Technically/administrative responsible
Name: Mrs. Anja Fertig
Position: Technician
E-mail: Anja.Fertig@med.uni-heidelberg.de
Phone: +496221 564026

Shipping address for samples:
Prof. Dr. Michael Kirschfink
Institute of Immunology
University of Heidelberg
Im Neuenheimer Feld 305
69120 Heidelberg, Germany

Analyses available

1. **Quantification** of the following components:
   - C1q, C4, C3, fB, fD, C1-inhibitor, fH, fI, Properdin, MBL (nephelometry, ELISA)
   - Eculizumab (drug monitoring) (ELISA). Activation products: C3a, C3d, Bb, sC5b-9.

2. **Functional analysis** of the following components:
   - Classical pathway (CH50, hemolytic test); Alternative pathway (APH50, hemolytic test), Lectin pathway (functional ELISA)
   - C1q, C1-C9, fB, fD (hemolytic tests)- incl. reconstitution assays
   - Eculizumab inhibitory capacity (hemolytic test)

3. **Autoantibodies** to the following components (including NeFs):
   - anti-C1q (IgG, ELISA), anti-fH (IgG, ELISA), C3 nephritic factor (hemolytic test),
   - anti-C1Inh (IgG, IgM, IgA,-ELISA)
4. **Genetic sequence and expression based analyses** – *not done*

   Specific genes:
   Disease packages:
   State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:

**Prices and response time** are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

   **XX** Prices and response time will be available from the technical/administrative responsible on request.

   Prices and response time is found on the laboratory’s website.
Country: Hungary
Name of Laboratory: Research Laboratory and George Füst Complement Diagnostic Laboratory, 3rd Department of Medicine, Semmelweis University
Website of Laboratory: www.kutlab.hu

Academically responsible
Name: Zoltan Prohaszka
Position: Head of the Laboratory
E-mail: prohaszka.zoltan@med.semmelweis-univ.hu
Phone: +3620-8250962

Technically/administrative responsible
Name: Zoltan Prohaszka
Position: Head of the Laboratory
E-mail: prohaszka.zoltan@med.semmelweis-univ.hu
Phone: +3620-8250962

Shipping address for samples:
Kutvolgyi Klinikai Tomb
Rendelointezet, Kutatolaboratorium
H-1125 Budapest, Kutvolgyi st 4
Hungary

Analyses available

1. Quantification of the following components:
   C3, C4, C1q, FB, FH, F1, P, C5, C6, C7, C8, C9
   MASP2, MBL, C1-inhibitor

2. Functional analysis of the following components:
   Classical pathway, alternative pathway, MBL-lectin pathway, C1-inhibitor function, C2 function

3. Autoantibodies to the following components (including NeFs):
   Anti-C1q (IgG), anti-FH (IgG), anti-C1 inhibitor (IgG, IgA, IgM), C3Nef, C4Nef, anti-properdin, anti-FB
4. Genetic sequence and expression based analyses
Specific genes: CFH, CFI, CD46, C3, CFB, THBD, DGKE, CFHR1, CFHR2, CFHR3, CFHR4, CFHR5, MMACHC, C2, C7, SERPING1, F12
CNV of CFHRs: MLPA, CNV of C4A and C4B

Disease packages: for aHUS, for C3GP, for angioedema, for complement component deficiencies (screening+identification of missing component)

State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: in evaluation, not yet available

Prices and response time

Prices and response time will be available from the technical/administrative responsible on request.

Prices and response time is found on the laboratory’s website
Italy

Country: Italy
Name of Laboratory: Laboratory of Immunology and Genetics of Rare Diseases - Clinical Research Center for Rare Diseases - Mario Negri Institute for Pharmacological Research

Website of Laboratory: http://www.marionegri.it/en_US/home/research_en/dipartimenti_en/molecular_medicine

Academically responsible
Name: Marina Noris
Position: Head of Laboratory
E-mail: marina.noris@marionegri.it
Phone: +39 0354535362

Technically/administrative responsible
Name: Elena Bresin
Position: Genetist
E-mail: elena.bresin@marionegri.it
Phone: +39 0354535327

Shipping address for samples:
Elena Bresin
Clinical Research Center for Rare Diseases, Villa Camozzi
Via Camozzi 3, 24020 Ranica
Bergamo
Italy

Analyses available

1. Quantification of the following components:
   C3, C4, SC5b-9, fH, fB, Bb

2. Functional analysis of the following components:
   CH50
   Serum induced C3 and C5b-9 deposition on cultured microvascular endothelial cells

3. Autoantibodies to the following components (including NeFs):
   Anti-FH
4. Genetic sequence and expression based analyses
   Specific genes: CFH, CFI, CD46, C3, CFB, THBD, DGKE, CFHR1, CFHR2, CFHR3, CFHR4, CFHR5, ADAMTS13, C5 (only SNP associated with eculizumab resistance).
   MLPA for CFH-CFHR1-5 region
   Disease packages: for aHUS, for C3 glomerulopathies
   We use both Next Generation sequencing (Ion Torrent PGM and S5-XL) and Sanger sequencing.

Prices and response time
Prices and response time will be available from the technical/administrative responsible on request.
Netherlands, Amsterdam

Country: Amsterdam, The Netherlands
Name of Laboratory: Sanquin Diagnostics
Website of Laboratory: www.sanquin.nl

Academically responsible
Name: Dr Kyra Gelderman
Position: Medical Immunologist, head Immunochemistry/complement lab
E-mail: k.gelderman@sanquin.nl
Phone: +31 20 5121361

Technically/administrative responsible
Name: Shirley Janssen
Position: Teamleader Immunochemistry/complement lab
E-mail: s.janssen@sanquin.nl
Phone: +31 20 5123247

Shipping address for samples:
Sanquin UDC
t.n.v Kyra Gelderman (1361)/Shirley Janssen (3247)
Plesmanlaan 125
1066 CX Amsterdam
The Netherlands

Analyses available

1. Quantification of the following components:
   C1q, C2, C3, C4, C5, fB, fH, C1INH, MBL, C4A/B, C3d, sC5b-9

2. Functional analysis of the following components:
   C1INH, haemolytic CH50, haemolytic AP50, lectin pathway activity (C4-dep), fH activity,
   blocking capacity C1INH antibodies, reconstitution hemolytic assay C1-C9

3. Autoantibodies to the following components (including NeFs):
   Anti-C1q, anti-C1INH (screen and functional inhibition), C3NeF, anti-fH (from autumn 2016)
4. Genetic sequence and expression based analyses

Specific genes:
Disease packages: (From 2017) complement/coagulation (including alternative pathway, terminal pathway, ADAMTS13, C1INH, aHUS genes)
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: NGS (ion torrent)

Prices and response time
Response time: Two weeks (excluding NGS)

X Prices and response time will be available from the technical/administrative responsible on request.

X Prices and response time is found on the laboratory’s website.
Netherlands, Nijmegen (1)

Country: The Netherlands
Name of Laboratory: Unit Complement Mediated Disorders, Translational Metabolic Laboratory, Radboud university medical center
Website of Laboratory: https://www.radboudumc.nl/Zorg/Afdelingen/Laboratoriumgeneeskunde/Pages/default.aspx

Academically responsible

Name: Prof. dr. Bert van den Heuvel
Position: Clinical Biochemical geneticist
E-mail: Bert.vandenHeuvel@radboudumc.nl
Phone: +31 24 36 17983

Name: Dr. Elena Volokhina
Position: Molecular biologist
E-mail: Elena.Volokhina@radboudumc.nl
Phone: +31 24 36 16353

Technically/administrative responsible

Name: Prof. dr. Bert van den Heuvel
Position: Clinical Biochemical geneticist
E-mail: Bert.vandenHeuvel@radboudumc.nl
Phone: +31 24 36 17983

Shipping address for samples:

Unit Complement Mediated Disorders at Clinical Genetics Centre Nijmegen
Radboud university medical center
830 Translational Metabolic Laboratory
Geert Grootplein Zuid 10
6525 GA Nijmegen
The Netherlands
Analyses available

1. **Quantification** of the following components:
   - Eculizumab (Soliris)
   - Eculizumab-C5 complex

2. **Functional analysis** of the following components:
   - Eculizumab inhibiting capacity

3. **Autoantibodies** to the following components (including NeFs):
   - Auto-antibodies to Factor H
   - C3 Nephritic Factor

4. **Genetic sequence and expression based analyses**
   Specific genes:
   - Vitronectin
   - C5
   - CD55 (DAF)
   - CD59
   - PLG (plasminogen)
   - CFP (properdin)

Disease packages:

**Congenital TTP:**
ADAMTS13

**aHUS/C3G package A:**
- CFH
- CFI
- CFB
- C3
- CD46 (MCP)
- MLPA of CFH and CFHR genes

**aHUS/C3G package B:**
- CFHR1
- CFHR2
- CFHR3
- CFHR4
- CFHR5
- THBD (thrombomodulin)
- DGKE

PCR robot in combination with Iontorrent and NexSeq 500. At present, first smMIPs panels are available for offering to clients.

**Prices and response time** are crucial for most clinicians.

Prices and response time will be available from the technical/administrative responsible on request.
Netherlands, Nijmegen (2)

**Country:** Netherlands  
**Name of Laboratory:** Laboratory for Medical Immunology  
**Website of Laboratory:**  
[https://www.radboudumc.nl/Zorg/Afdelingen/Laboratoriumgeneeskunde/Specialismes/MedischeImmunologie/Pages/default.aspx](https://www.radboudumc.nl/Zorg/Afdelingen/Laboratoriumgeneeskunde/Specialismes/MedischeImmunologie/Pages/default.aspx) (only in Dutch)

**Academically responsible**  
Name: Dr. Renate van der Molen  
Position: Medical Immunologist  
E-mail: renaevandermolen@radboudumc.nl  
Phone: (+31) 024-3668143

**Technically/administrative responsible**  
Name: Corrie de Kat Angelino  
Position: senior technician  
E-mail: corrie.dekatangelino@radboudumc.nl  
Phone: (+31) 024-3614435

**Shipping address for samples:**  
Radboudumc  
Department of Laboratory Medicine, Laboratory for Medical Immunology  
Section HIM  
PO-BOX 9101, route 469  
6500 HB Nijmegen  
The Netherlands

**Analyses available**

1. **Quantification** of the following components: **C3, C4, C3d**

2. **Functional analysis** of the following components: Classical complement pathway (CH50), Alternative complement pathway (AP50), functional MBL concentration

3. **Autoantibodies** to the following components (including NeFs): n.a.

4. **Genetic sequence and expression based analyses** n.a.  
   Specific genes:  
   Disease packages:
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:

**Prices and response time**

Prices and response time will be available from the technical/administrative responsible on request.
Slovenia

Country: Slovenia
Name of Laboratory: Laboratory for Humoral Immunology
Website of Laboratory: website will be upgraded in the near future
http://www.imi.si/o-institutu/organiziranost/hum

Academically responsible
Name: Saša Simčič
Position: Research Associate Assistant Lecturer PhD, Bachelor of Chemistry
Head Laboratory for Humoral Immunology
E-mail: sasa.simcic@mf.uni-lj.si
Phone: +386 1 5437491

Technically/administrative responsible
Name: Sanja Stopinšek
Position: Research Assistant PhD, Bachelor of Biology
E-mail: sanja.stopinsek@mf.uni-lj.si
Phone: +386 1 5437481

Shipping address for samples:
University of Ljubljana,
Faculty of Medicine,
Institute of Microbiology and Immunology,
Zaloška 4, SI-1000
Ljubljana, Slovenia

Analyses available

1. Quantification of the following components: C1Inhibitor, C1q, C2, C3, C4, C5, C6, C7, C8, C9, FB, FH, FI, SC5b-9, C3dg, C4d

2. Functional analysis of the following components: CH50, AH50, CP EIA, AP EIA, LP EIA, C1Inhibitor activity

3. Autoantibodies to the following components (including NeFs): C3NeFs, anti-FH, anti-C1q

4. Genetic sequence and expression based analyses
   Specific genes: n.a.
Disease packages: n.a.
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: n.a.

Prices and response time are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

Prices and response time will be available from the technical/administrative responsible on request.

Prices and response time is found on the laboratory’s website.
(Prices and response time will be found on the laboratory’s website when upgraded.)
Spain

Country: Spain
Name of Laboratory: Unidad de Inmunología: Hospital Universitario La Paz
Website of Laboratory:

Academically responsible
Name: Margarita López Trascasa
Position: Chief
E-mail: mltrascasa@salud.madrid.org
Phone: +34 912071463

Technically/administrative responsible
Name: Sofía Garrido
Position: Technician
E-mail: sofia.garrido@salud.madrid.org
Phone: +34912071109

Shipping address for samples:
Unidad de Inmunología. Hospital Universitario La Paz
Hospital Infantil. Planta sótano
Paseo de la Castellana, 261.
28046 Madrid, Spain

Analyses available
1. Quantification of the following components: C1q, C1 inhibitor, C2, C3, C4, C5, C6, C7,C8, Factor B, Factor H, Factor I, Properdin, sC5b-9, eculizumab levels.

2. Functional analysis of the following components: C1 inhibitor, C2, C5, C6, C7, C8,Factor B, Factor H, Properdin, Moreover: CH-50, AP-50

3. Autoantibodies to the following components (including NeFs): anti C1 inhibitor, anti-C1q, C3NEF, anti-Factor H, anti-C3, anti-Properdin, anti-Factor B, anti-Factor I

4. Genetic sequence and expression based analyses
Specific genes: C1q, C1 inhibitor, C2, C5, Factor D, Factor I, Coagulation Factor XII
Disease packages: Hereditary angioedema ; C2 deficiency; C5 deficiency; Factor I deficiency; aHUS, C3G in collaboration with Santiago Rodríguez de Córdoba)
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:

Prices and response time

Prices and response time will be available from the technical/administrative responsible on request.
Sweden

Country: Sweden
Name of Laboratory: Clinical Immunology and Transfusion Medicine, Laboratory Medicine, Lund, Region Skåne
Website of Laboratory: http://vardgivare.skane.se/vardriktlinjer/laboratoriemedicin/kontakt/ (website in Swedish)

Academically responsible
Name: Lillemor Skattum
Position: MD, PhD
E-mail: Lillemor.skattum@skane.se
Phone: +46 46 173978

Technically/administrative responsible
Name: Lillemor Skattum
Position: Process leader, senior consultant in clinical immunology
E-mail: Lillemor.skattum@skane.se
Phone: +46 46 173296 (complement lab)

Shipping address for samples:
Clinical Immunology
Provinlämningen, klinisk kemi
Klinikgatan 19
SE-221 85 Lund
Sweden

Analyses available

1. **Quantification** of the following components: C1q, C1r, C1s, C1 inhibitor, MBL, C4, C2, C3, FB, FD, properdin, C5, C6, C7, C8, FH, FI, C4BP. MCP expression on leukocytes available from 2017. C9 analysis is available as Ouchterlony double immunodiffusion. Activation products: TCC (sC5b-C9), C3d

2. **Functional analysis** of the following components: FH, C1 inhibitor, FD

3. **Autoantibodies** to the following components (including NeFs): C1q, FH, C1 inhibitor, C3NeF
4. Genetic sequence and expression based analyses

Specific genes: C2 deficiency type 1 (28 kBP deletion) and C2 gene sequencing, MBL genotyping, C1 inhibitor gene sequencing, C4A/C4B deficiency, properdin gene sequencing

Disease packages:
State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:

Prices and response time are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

- Prices and response time will be available from the technical/administrative responsible on request. Yes
- Prices and response time is found on the laboratory’s website. Yes, for most analytes (website in Swedish)
Country: Sweden
Name of Laboratory: Dept of Pediatrics Lund University
Website of Laboratory: http://portal.research.lu.se/portal/en/persons/diana-karpman(d1e6810c-2936-460f-a77a-e57a0295dd7a).html

Academically responsible
Name: Diana Karpman
Position: Professor
E-mail: Diana.karpman@med.lu.se
Phone: +46-46-2220747

Technically/administrative responsible
Name: Ann-Charlotte Kristoffersson
Position: Research technician
E-mail: ann-charlotte.kristoffersson@med.lu.se
Phone: +46-46-20744

Shipping address for samples:
Ann-Charlotte Kristoffersson
BMC C14 Pediatrics
Klinikgatan 28
Lund University
22184 Lund

Analyses available
1. Quantification of the following components:

2. Functional analysis of the following components:

3. Autoantibodies to the following components (including NeFs):

4. Genetic sequence and expression based analyses
   Specific genes: factor H, factor I, MCP/CD46, C3, factor B, C5, plasminogen, factor H-related proteins 1-5, ADAMTS13, clusterin, properdin, thrombomodulin, DGKE
   Disease packages: aHUS/TTP
   State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests:
Whole-exome sequencing is performed in collaboration of the Center for Molecular Diagnostics, Region Skåne and Clinical Genomics Lund, SciLifeLab. Illumina TruSeq Rapid Exome library kit is used.

Prices and response time are crucial for most clinicians. Please give either of the following information (tick/mark the one which fits – or both if appropriate):

Prices and response time will be available from the technical/administrative responsible on request.
Switzerland

Country: Switzerland
Name of Laboratory: Medical Immunology, Laboratory Medicine, University Hospital Basel
Website of Laboratory: www.labormedizin-uhbs.ch

Academically responsible
Name: Ingmar A.F.M. Heijnen
Position: Head
E-mail: ingmar.heijnen@usb.ch
Phone: (+) 41 61 556 55 81

Technically/administrative responsible
Name: Therese Vogel
Position: Chief technician
E-mail: therese.vogel@usb.ch
Phone: (+) 41 61 328 53 92

Shipping address for samples:
Medical Immunology
Laboratory Medicine
University Hospital Basel
Petersgraben 4
CH-4031 Basel
Switzerland

Analyses available

1. Quantification of the following components:
   C1q, C2, C3, C4, Properdin, C1-inhibitor, sC5b-9

2. Functional analysis of the following components:
   Classical pathway, alternative pathway, MBL-lectin pathway, C1-inhibitor

3. Autoantibodies to the following components (including NeFs):
   Anti-C1q (IgG)
4. Genetic sequence and expression based analyses
   Specific genes: n.a.
   Disease packages: n.a.
   State Whether Next Generation Sequencing is used and which molecular platforms that are available for these tests: n.a.

Prices and response time

Prices and response time will be available from the technical/administrative responsible on request. Prices and response time are found on the laboratory's website.