ERNDIM
Qualitative Organic acids Urine
Heidelberg ANNUAL REPORT 2020

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Published: 17 February 2021[1]

1. Introduction

The ERNDIM Qualitative Organic Acids in urine scheme offers urine samples obtained from confirmed patients with confirmed diagnoses to enable laboratories to gain or maintain experience to identify organic acid disorders. The scheme is organised by Dr Claus-Dieter Langhans (metabolic center Heidelberg) in conjunction with CSCQ, the Swiss organisation for quality assurance in medical laboratories.
As in previous years, samples were sent out to cover the spectrum of what is typically observed in the metabolic laboratory. A mix of clearly diagnostic profiles and some more challenging profiles were provided. As in previous years normal profiles were also sent out. The requirement to interpret a normal profile, as such, is as important as correctly identifying abnormal profiles. Correctly identifying a profile as normal can avoid unnecessary further investigation and distress to the patient and family.

2. Participants

In 2020 seventy-four laboratories from many different countries participated in the QLOU Heidelberg scheme. There were no educational participants in 2020 (none in 2019). They take part in all aspects of the scheme and receive interim reports with scores, but performance is not indicated on the ERNDIM certificate of performance.

Participants and new applicants will be distributed between the Barcelona, Heidelberg and Sheffield qualitative urinary organic acid schemes which are run separately. The three organising laboratories each participate in the other's scheme by rotation.

Geographical distribution of participants				
Country	*Number of laboratories*		*Country*	*Number of laboratories*
Austria	3		Latvia	1
Bulgaria	1		Lithuania	1
Canada	11		Luxembourg	1
China	2		Mexico	1
Croatia	1		Netherlands	8
Czech Republic	2		Slovenia	1
Denmark	1		Spain	1
Egypt	1		Sri Lanka	1
Estonia	2		Switzerland	3
Germany	17		Thailand	1
India	1		Turkey	10
Italy	1		Vietnam	1

[1] If these scheme instructions are not Version 1 for this scheme year, go to APPENDIX 1 for details of the changes made since the last version of this document

3. Design of the scheme and logistics

As usual, the samples used in 2020 were authentic human urine samples, six from affected patients and three from healthy individuals.
All samples selected by the Scientific Advisor have been heat-treated and were tested for suitability in the Scientific Advisor's laboratory.
In 2020 CSCQ dispatched the QLOU EQA samples to the scheme participants and provides a website for on-line submission of results and access to scheme reports. Existing QLOU, ACDB, DPT and Urine MPS scheme participants can log on to the CSCQ results submission website at: https://cscq.hcuge.ch/cscq/ERNDIM/Initial/Initial.php
Labelled copies of chromatograms can be uploaded on the CSCQ website.

4. Schedule of the scheme

Time schedule in the 2020 ERNDIM QLOU Heidelberg scheme.

	1st Submission Round	2nd Submission Round	3rd Submission Round
Sample ID's:	QLOU-DH-2020-A QLOU-DH-2020-B QLOU-DH-2020-C	QLOU-DH-2020-D QLOU-DH-2020-E QLOU-DH-2020-F	QLOU-DH-2020-G QLOU-DH-2020-H QLOU-DH-2020-I
Shipment of samples	February 12th, 2020		
Start of analysis (clinical data available)	May 11th, 2020	July 6th, 2020	September 7th, 2020
Reminder for result submission	May 25th, 2020	July 20th, 2020	September 21th, 2020
Results submission deadline:	June 1st, 2020	July 27th, 2020	September 28th, 2020
Interim reports available on CSCQ website	August 4th, 2020	November 26th, 2020	November 26th, 2020

To be able to continue this scheme we need a steady supply of new patient samples. Several laboratories have donated samples to the Urine QLOU scheme in the past, for which they are gratefully acknowledged. If you are able to collect one or more samples and are willing to donate these to the scheme, please contact us at admin@erndim.org.
Laboratories which donate samples that are used in the scheme are eligible for a 20% discount on their participation in the QLOU scheme in the following year.

Samples included in the 2020 ERNDIM QLOU Heidelberg scheme.

Survey	Sample no.	Diagnosis
20-05-OUH	QLOU-DH-2020-A	Canavan disease
	QLOU-DH-2020-B	normal control
	QLOU-DH-2020-C	D-2-hydroxyglutaric aciduria
20-07-OUH	QLOU-DH-2020-D	ornithine transcarbamylase (OTC) deficiency
	QLOU-DH-2020-E	normal control
	QLOU-DH-2020-F	propionic aciduria
20-09-OUH	QLOU-DH-2020-G	glutaric aciduria type 1 (low excretor)
	QLOU-DH-2020-H	normal control
	QLOU-DH-2020-I	succinic semialdehyde dehydrogenase (SSADH) deficiency

The scheme format was kept identical to those of previous years. Samples were shipped by regular mail. Details regarding stability of samples are provided in the sample package.

Interim reports were generated by the evaluation program developed by CSCQ.

5. Results

Returned results in the 2020 ERNDIM QLOU Heidelberg scheme.

Submissions	Number of laboratories	%
3	71	96
2	0	0
1	0	0
0	3	4

6. Website reporting

The website reporting system is compulsory for all centres. Please read carefully the following advice:

- Results
  - Give quantitative data as much as possible.
  - Enter the key metabolites with the evaluation **in the tables** even if you don't give quantitative data.
  - If the profile is normal: enter "Normal profile" in "Key metabolites".
  - **Don't enter results in the "comments" window**, **otherwise your results will not be included in the evaluation program.**
- ***Diagnosis***
  - **Don't enter the diagnosis in the "comments" window**, **otherwise your results will not be included in the evaluation program.**
- Recommendations = **advice for further investigation**.
  - Scored together with the interpretative score.
  - Advice for treatment are not scored.
  - **Don't give advice for further investigation in "Comments on diagnosis"**: it will not be included in the evaluation program.

7. Scoring of results

A scoring system was developed in 2012 and approved by the ERNDIM Scientific Advisory Board. Similar to other qualitative (proficiency testing) ERNDIM schemes, the maximum score for a sample is 4 points.
Qualitative results and diagnostic proficiency of the 2020 samples were scored using the criteria given below. These criteria have been set by the Scientific Advisor, approved by the Scientific Advisory Board. The final decision about scoring of the scheme is made in the Scientific Advisory Board (SAB) during the autumn meeting (November 19th, 2020).

General criteria used to score results

Item	Description of scoring criteria	Score
Quantitative results	Correct classification of quantitative results (i.e. normal or increased) according to reference values	1
	Incorrect classification of quantitative results	0
Qualitative results	Correct results according to criteria set for the sample	1
	Incorrect: minimally required results not reported	0
Diagnostic proficiency	Correct according to criteria set for the sample	2
	Partially correct	1
	Unsatisfactory or misleading	0
	Maximum total score	**4**

Starting with the 2014 schemes the concept of 'critical error' has been introduced to the assessment of the qualitative schemes. Labs failing to make a correct diagnosis of a sample considered eligible for this category will be deemed not to have reached a satisfactory performance even if their total points

for the year is sufficient according to the requirement set by the SAB. The classification of samples to be judged for critical error was undertaken at the SAB meeting held on November 19th, 2020.

Samples eligible for critical errors in the 2020 ERNDIM QLOU Heidelberg scheme.

Sample ID	Critical errors
QLOU-DH-2020-A	6
QLOU-DH-2020-C	6
QLOU-DH-2020-D	2
QLOU-DH-2020-G	5
QLOU-DH-2020-I	2

Details are given under item 9 'Results of individual samples and evaluation of reporting'.

We are required to define "Participation" for the purpose of the ERNDIM Annual Certificate which covers all ERNDIM schemes. For this urinary organic acid scheme we have defined "**Participation**" as requiring **at least two returns during the year**. Failure to meet this requirement will result in the certificate of participation showing 'non-submitter' rather than 'satisfactory' or 'unsatisfactory'.

Satisfactory performance is defined as **70% of maximum score** which equates **25/36** points for three returns and **17/24** points for two returns.

If your laboratory is assigned poor performance and you wish to appeal against this classification please email the ERNDIM Administration Office (admin@erndim.org), with full details of the reason for your appeal, within one month receiving your Performance Support Letter.

8. Proficiency of the 2020 surveys

ERNDIM provides a single certificate for all its schemes with details of participation and performance.

From the 71 ordinary (non-educational) participants who submitted 3 reports only 55 (77%) achieved satisfactory performance (score ≥ *25 / 17*, no critical error).

Overall proficiencies of the 2020 surveys.

Sample ID	Sample type	Proficiency (%)
QLOU-DH-2020-A	Canavan disease	89
QLOU-DH-2020-B	normal control	94
QLOU-DH-2020-C	D-2-hydroxyglutaric aciduria	89
QLOU-DH-2020-D	ornithine transcarbamylase (OTC) deficiency	94
QLOU-DH-2020-E	normal control	99
QLOU-DH-2020-F	propionic aciduria	99
QLOU-DH-2020-G	glutaric aciduria type 1 (low excretor)	75
QLOU-DH-2020-H	normal control	94
QLOU-DH-2020-I	succinic semialdehyde dehydrogenase (SSADH) deficiency	93

Twenty-one Performance Support letters will be sent for the 2020 surveys. Three participants received a Performance Support letter for two critical errors and one for three critical errors. Unsatisfactory performance (either due to overall score or due to critical error) within an EQA scheme for at least 2 out of 3 years that the participant has subscribed for will result in a notification letter of unsatisfactory performance to the quality manager or head of department.
For the 2019 scheme no Performance Support letters were sent.

9. Results of individual samples and evaluation of reporting

Sample QLOU-DH-2020-A:

Patient details: 3-year-old boy presented at three months of age with spastic dystonia of lower limbs and feeding problems

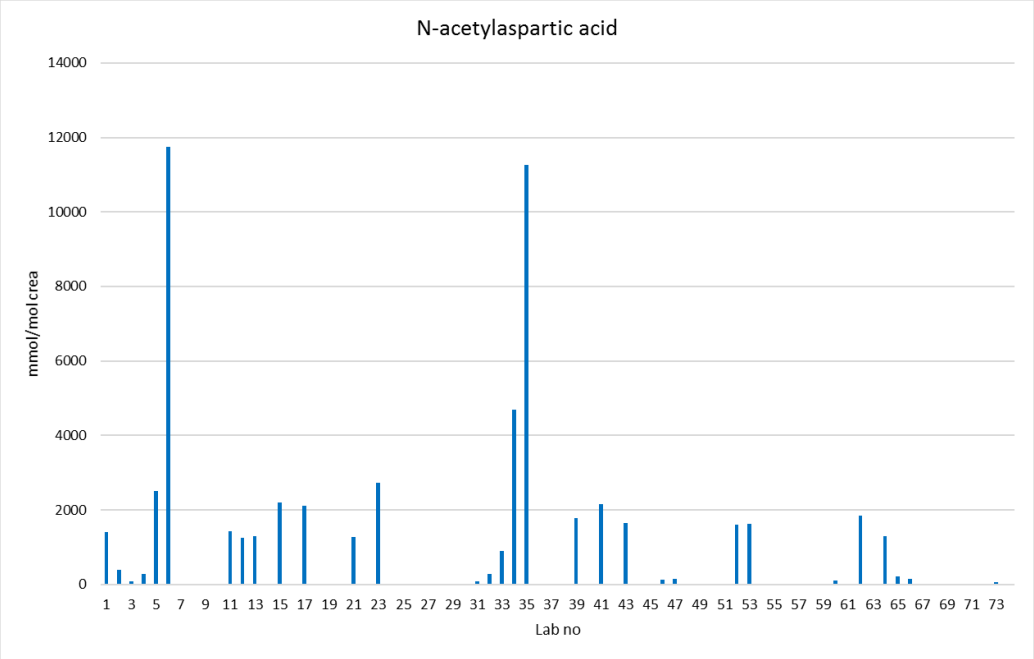
Known diagnosis: Canavan disease

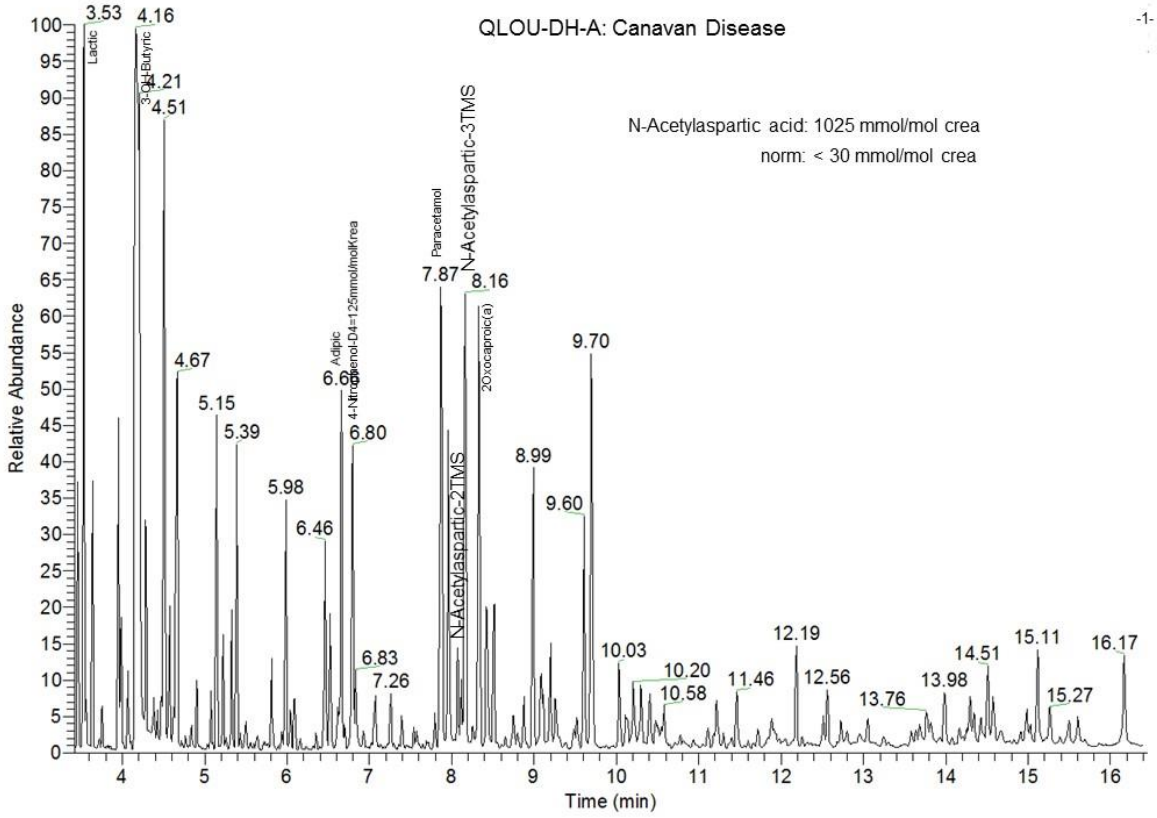
Analytical details: The chromatogram showed several abnormalities. Beside a prominent signal for paracetamol, elevated lactic acid and 3-hydroxybutyric acid reflects massive ketosis.

The key metabolite in this sample was N-acetylaspartic acid. Elevated concentrations were found by sixty-three participants (89%).

Quantitative results of relevant metabolites

[mmol/mol creatinine]	N	Median	SD
N-acetylaspartic acid	32	12952	2699





Interpretation: All participants who identified elevated amounts of N-acetylaspartic acid diagnosed correctly Canavan disease.

Overall impression: Analytical performance was only moderate.

Analytical performance	89%
Interpretative performance	89%
Overall performance	89%

Critical error: The SAB considered this sample to be eligible for a critical error.

Six laboratories received a critical error for this sample.

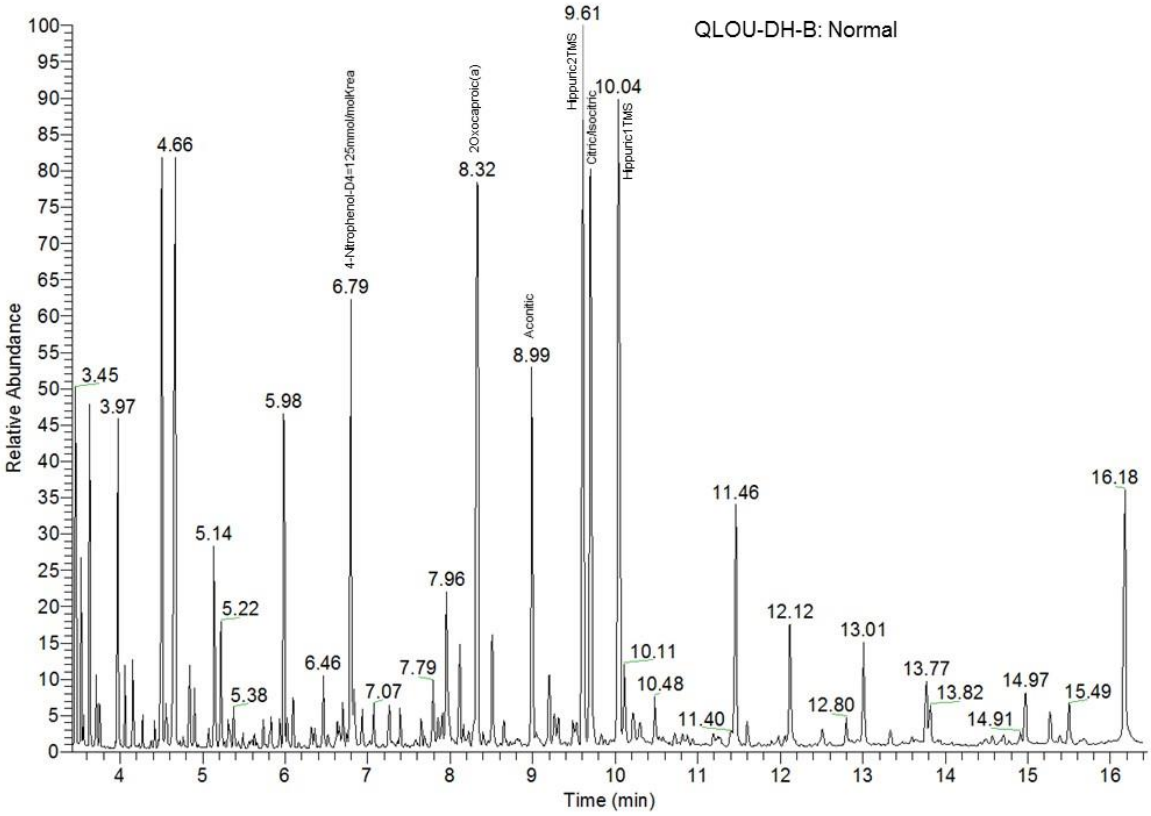
Sample QLOU-DH-2020-B:

Patient details: 4-year-old male, epilepsy with focal seizures

Known diagnosis: normal control sample

Analytical details: The organic acid profile of this sample was clearly normal. This was reported by fifty-six participants (76%).

Eighteen labs reported several metabolites which they considered to be elevated. Most prominent were glycolic acid and lactic acid.



Interpretation: Sixty-six participants (94%) diagnosed a normal sample.

Four labs suggested 2-hydroxyglutaric aciduria, glutaric aciduria type I, branched-chain ketoacid dehydrogenase kinase deficiency or hyperoxaluria type I. Depending on the recommendations, one or two points were deducted.

Overall impression: The majority of the participants did not have any difficulties to identify this normal sample.

Sample QLOU-DH-2020-C:

Patient details: 5-year-old girl with seizures, developmental delay and muscular hypotonia

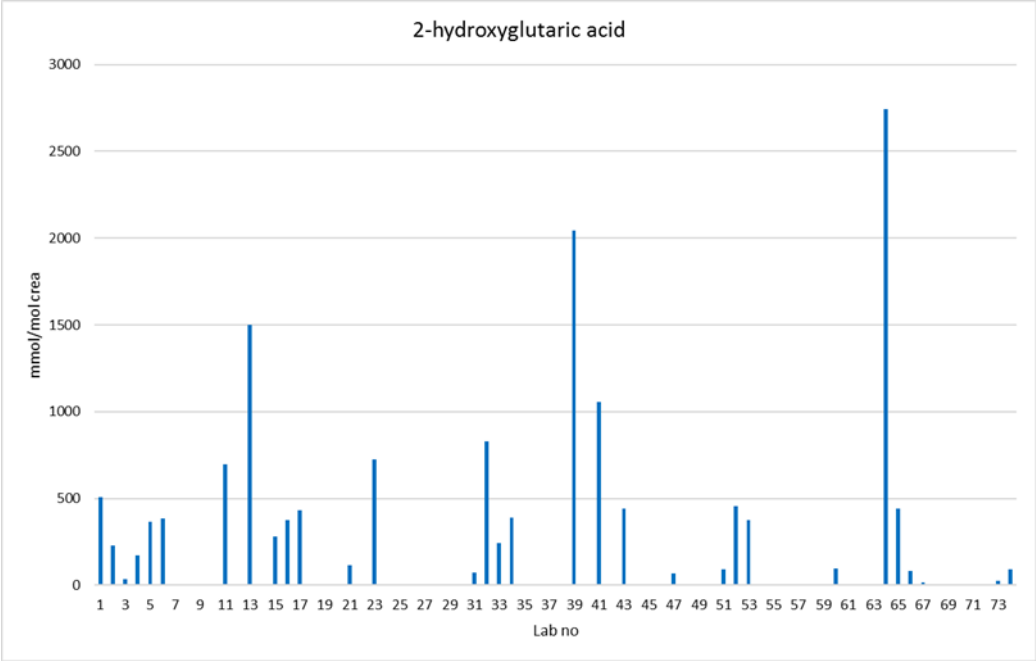
Known diagnosis: D-2-hydroxyglutaric aciduria

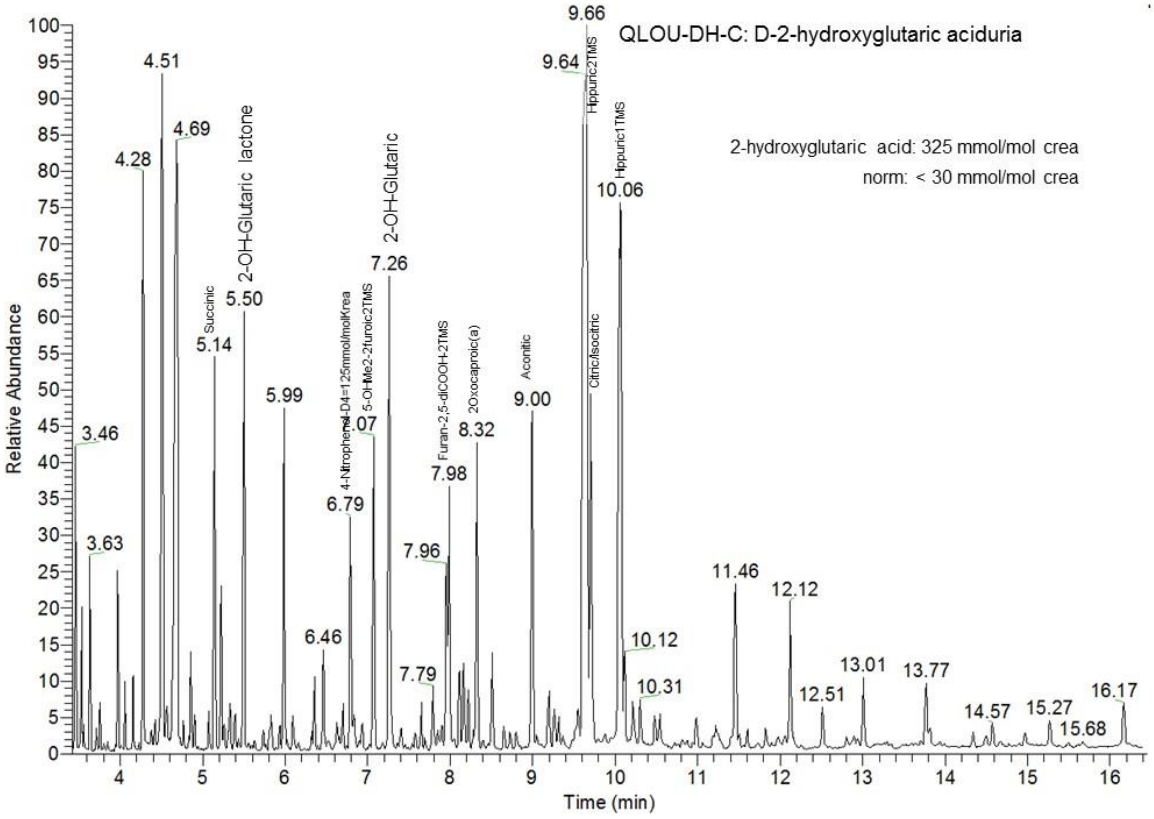
Analytical details: Even though the urine was highly diluted, the signal of 2-hydroxyglutaric acid was clearly detectable due to the high excreted amount. Depending of the used method the lactone of 2-hydroxyglutaric acid can also be identified.

Enantio-separation would reveal elevation of the D-enantiomer of this hydroxy acid.

Sixty-four participants (90%) reported the finding of 2-hydroxyglutaric acid.

[mmol/mol creatinine]	N	Median	SD
2-hydroxyglutaric acid	33	364.0	508.0





Interpretation: The correct diagnosis was given by sixty-three participants (89%).

Five responders diagnosed a normal sample and one vitamin B_{12} deficiency.

Overall impression: Analytical performance was quite good.

Analytical performance	90%
Interpretative performance	89%
Overall performance	89%

Critical error: the failure to identify abnormal amounts of 2-hydroxyglutaric acid was considered by the SAB as a critical error.

This applied to six participants.

Sample QLOU-DH-2020-D:

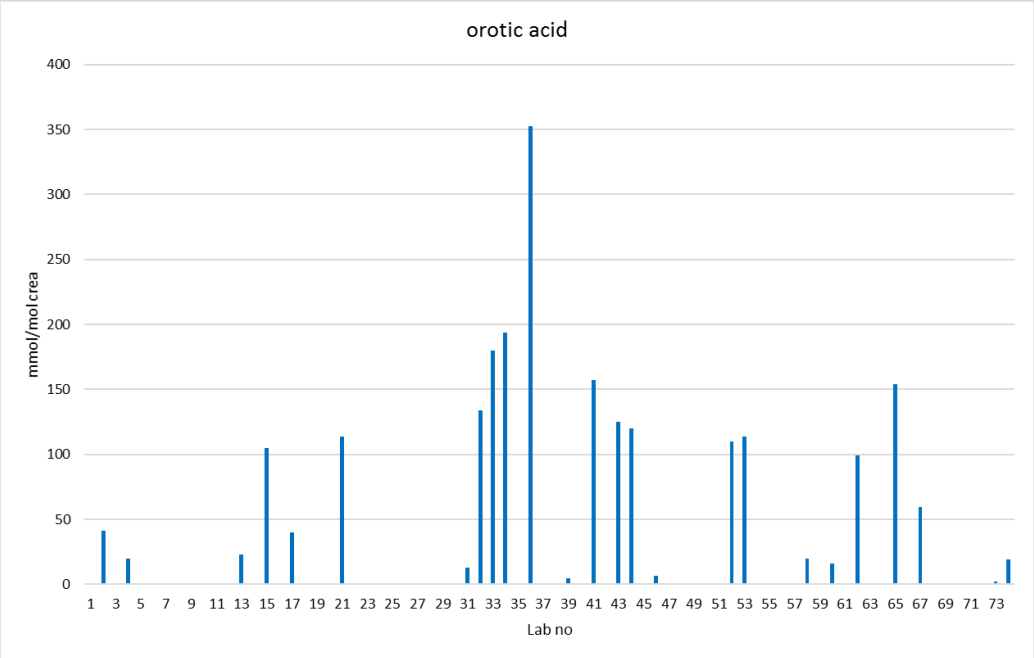
Patient details: 4-year-old girl with recurrent episodes of vomiting and reduced consciousness, currently under treatment

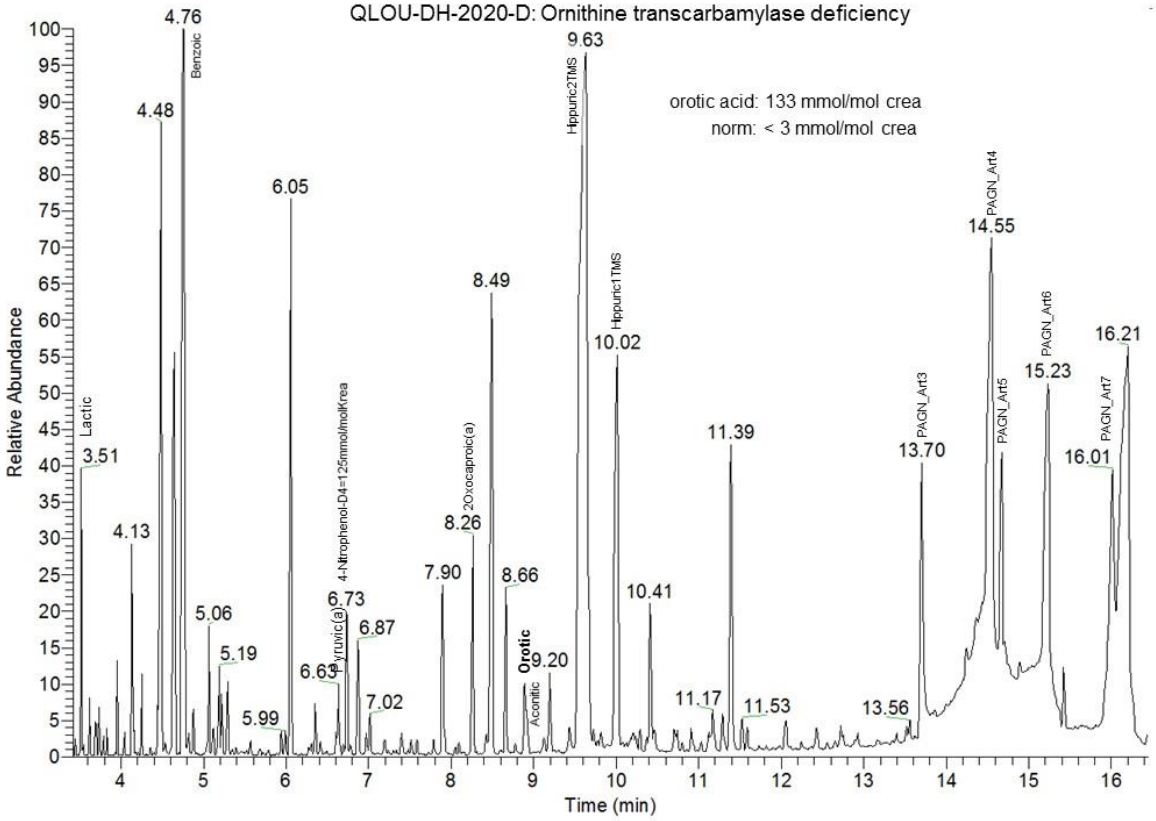
Known diagnosis: ornithine transcarbamylase (OTC) deficiency

Analytical details: the organic acid profile of this sample is dominated by several signals that result from the ongoing treatment during urine collection, mainly hippuric acid and phenylacetylglutamine (PAGN). Furthermore, lactic acid and pyruvic acid was also elevated.

However, the key to the right diagnosis was identification of elevated orotic acid.
Sixty participants (85%) reported orotic acid as elevated, seven (10%) as normal or could not detect this metabolite.

[mmol/mol creatinine]	N	Median	SD
orotic acid	28	50.4	80.6





Interpretation: Most of the participants diagnosed diseases that are associated with hyperammonaemia. This was accepted as a correct diagnosis.

Suggested diagnoses were ornithine transcarbamylase deficiency (35/71), urea cycle defect (25/71), 35%), HHH syndrome (2/71), argininosuccinic aciduria (1/71) and citrullinaemia type I (1/71).
Two participants who did not reported orotic acid and diagnosed PKU and hyperphenylalaninaemia

Overall impression: Analytical performance was quite good.

Analytical performance	90%
Interpretative performance	89%
Overall performance	89%

Critical error: In the SAB meeting it was agreed that diagnosing PKU or hyperphenylalaninaemia should be classed a critical error.
Two critical errors were given for this sample.

Sample QLOU-DH-2020-E:

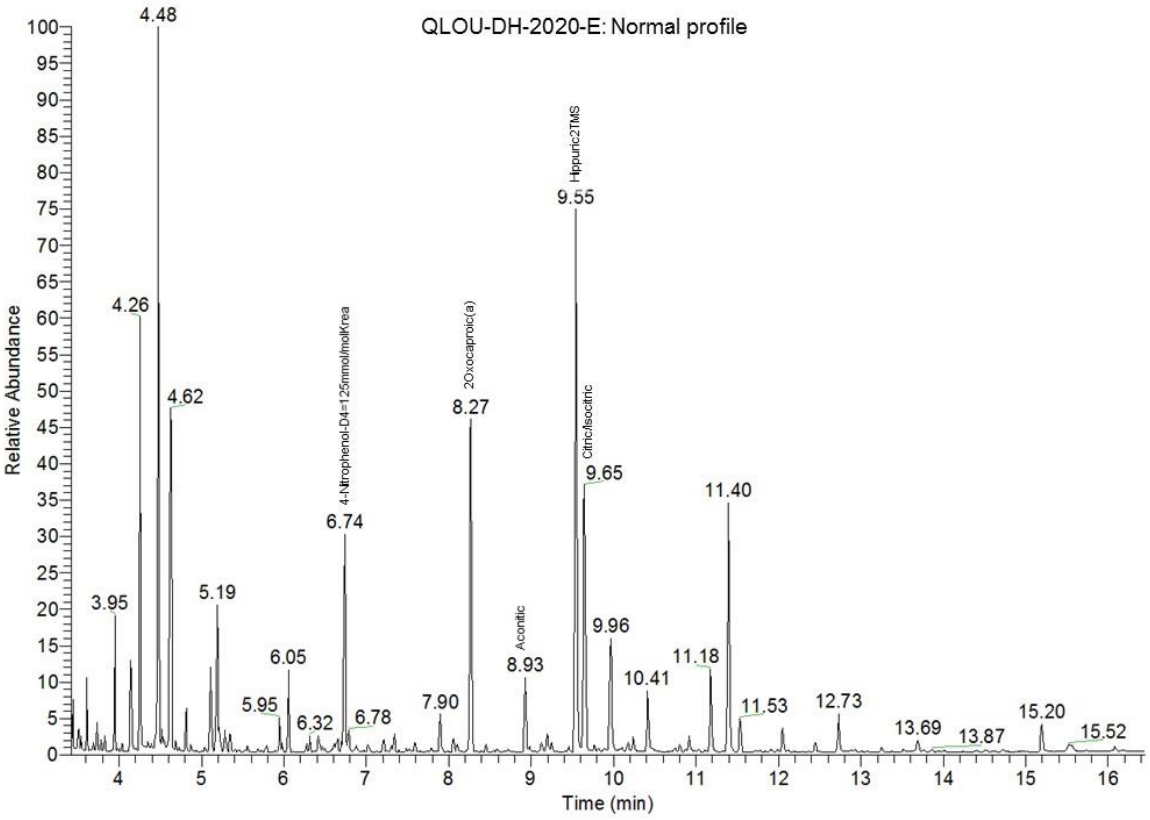
Patient details: 11-year-old boy with autistic features

Known diagnosis: normal control sample

Analytical details and interpretation: clearly normal pattern of organic acids.

Nearly all participants gave a normal diagnosis.

The overall proficiency was 99%



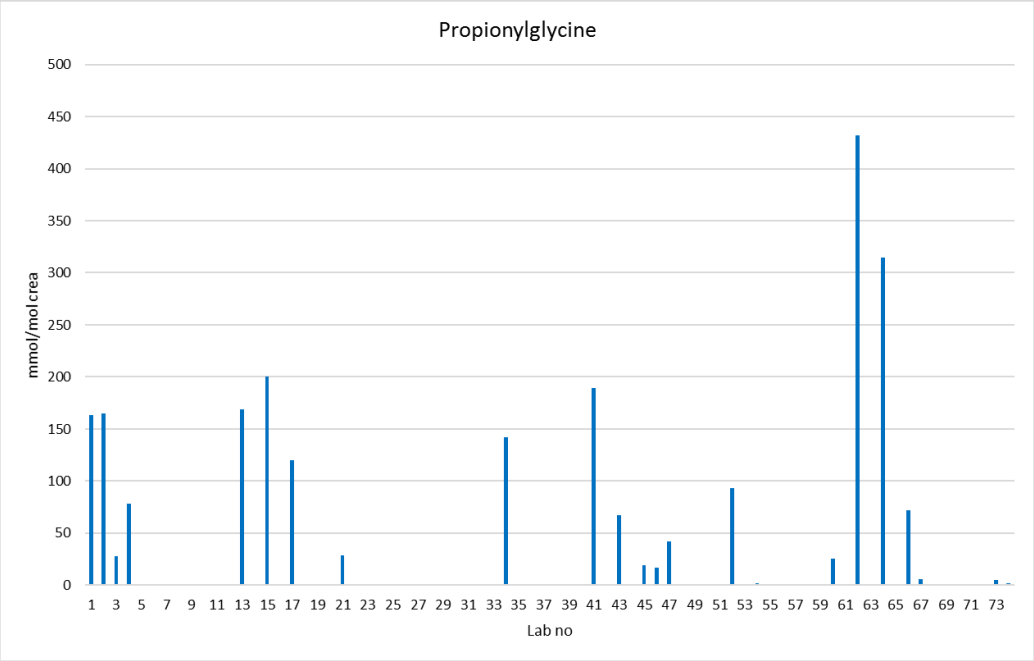
Sample QLOU-DH-2020-F:

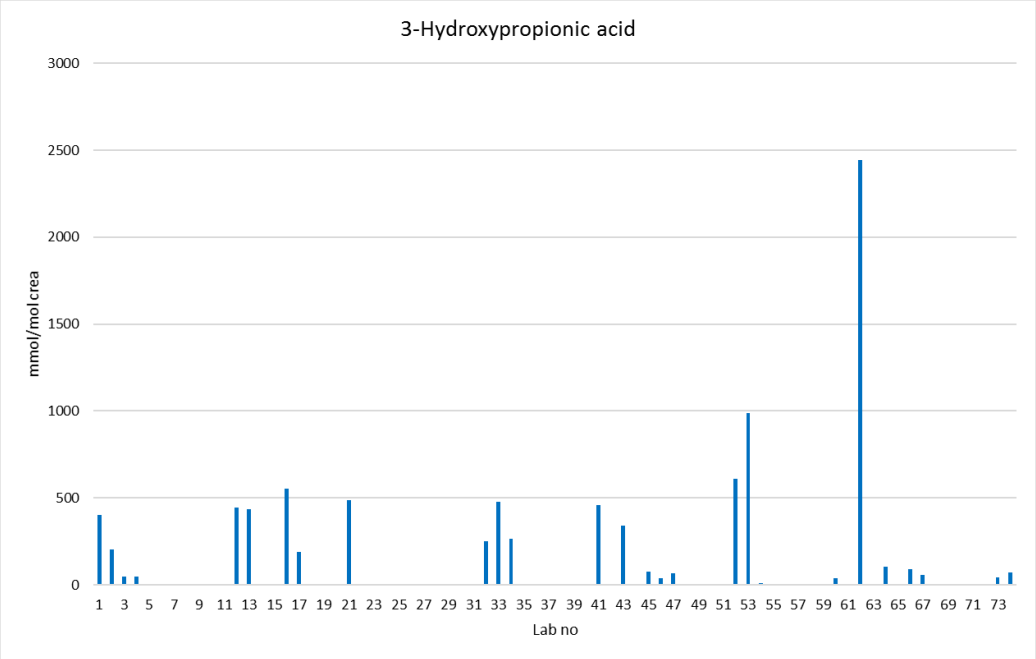
Patient details: 8 months-old male admitted with severe metabolic acidosis during gastrointestinal infection. Now recompensated

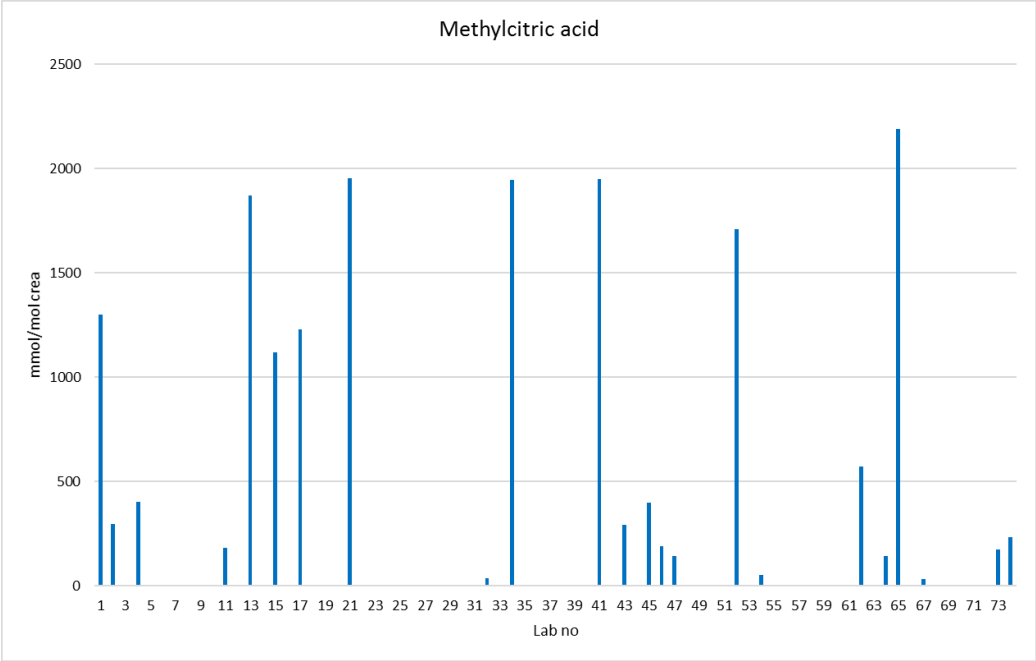
Known diagnosis: propionic aciduria due to propionyl-CoA carboxylase deficiency

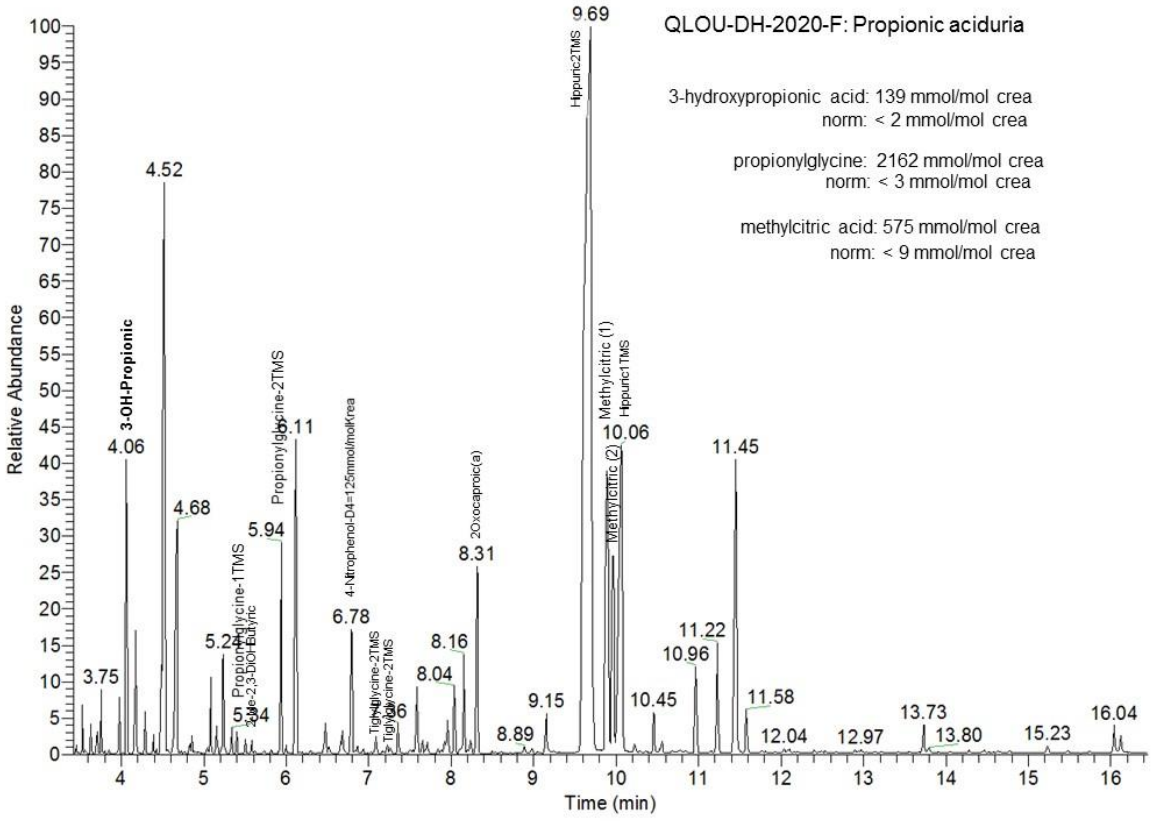
Analytical details: the chromatogram showed intensive signals for 3-hydroxypropionic acid, methylcitric acid, and propionylglycine. All participants reported at least two of these metabolites.

[mmol/mol creatinine]	N	Median	SD
Propionylglycine	23	72.0	106.52
3-hydroxypropionic acid	27	205.0	473.8
methylcitric acid	23	398.0	761.81


Propionylglycine
mmol/mol crea
500
450
400
350
300
250
200
150
100
50
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73
Lab no


3-Hydroxypropionic acid
mmol/mol crea
3000
2500
2000
1500
1000
500
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73
Lab no





Interpretation: 99% of the participants (70/71) reported correctly propionic aciduria.

One participant supposed multiple carboxylase deficiency as the most probable diagnosis

Overall impression: This was a rather easy sample with very good analytical and interpretative proficiency.

Analytical performance	100%
Interpretative performance	99%
Overall performance	99%

Sample QLOU-DH-2020-G:

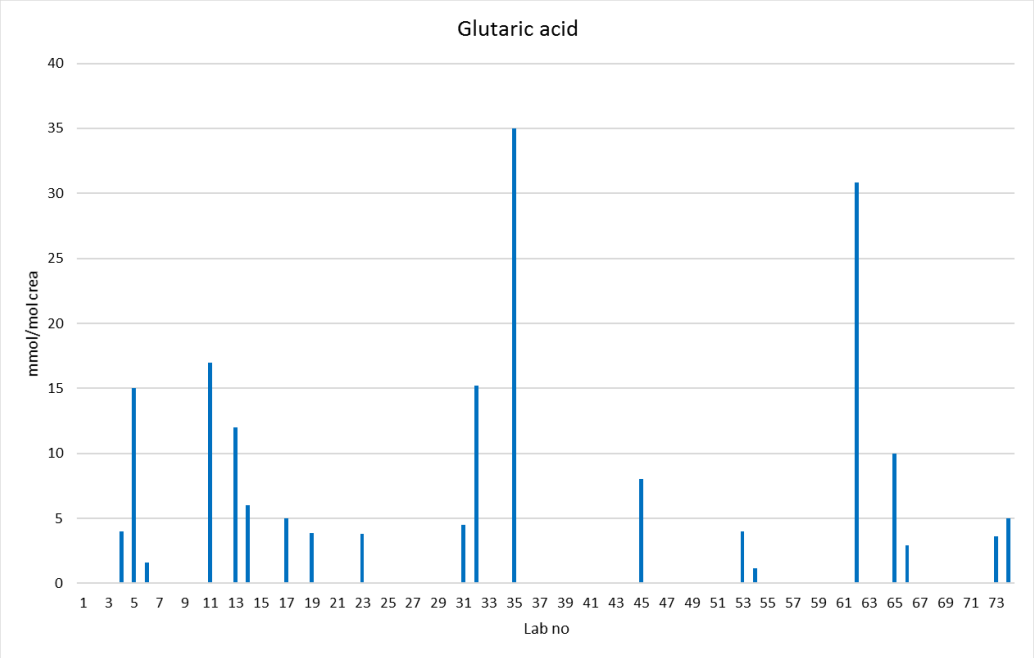
Patient details: This girl was hospitalized at 19 months of age with fever and vomiting, reduced consciousness and a generalized seizure

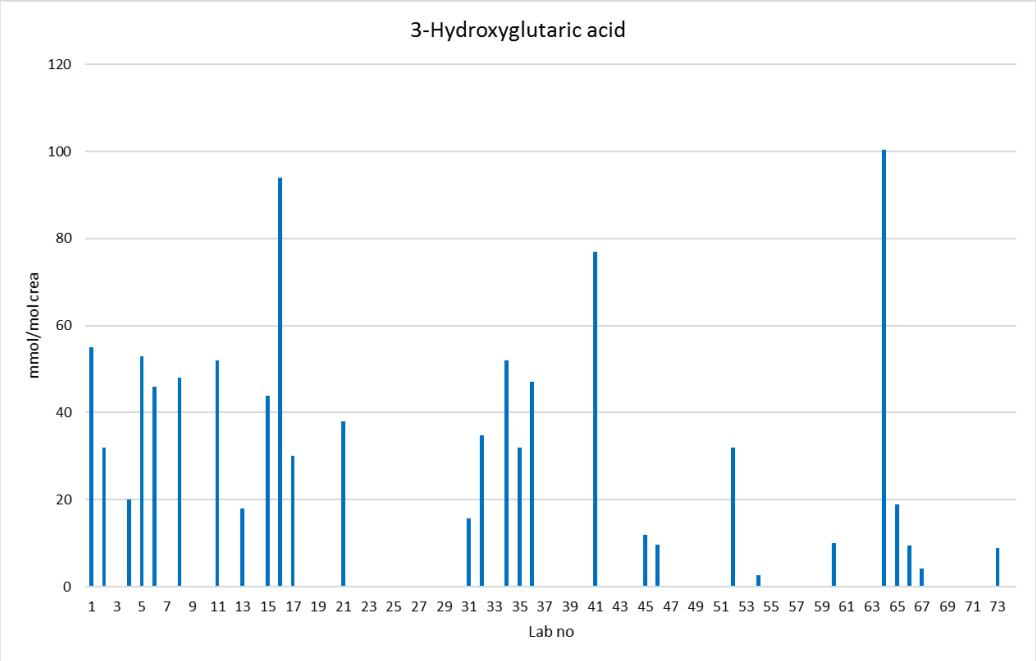
Known diagnosis: glutaric aciduria type I (low excretor)

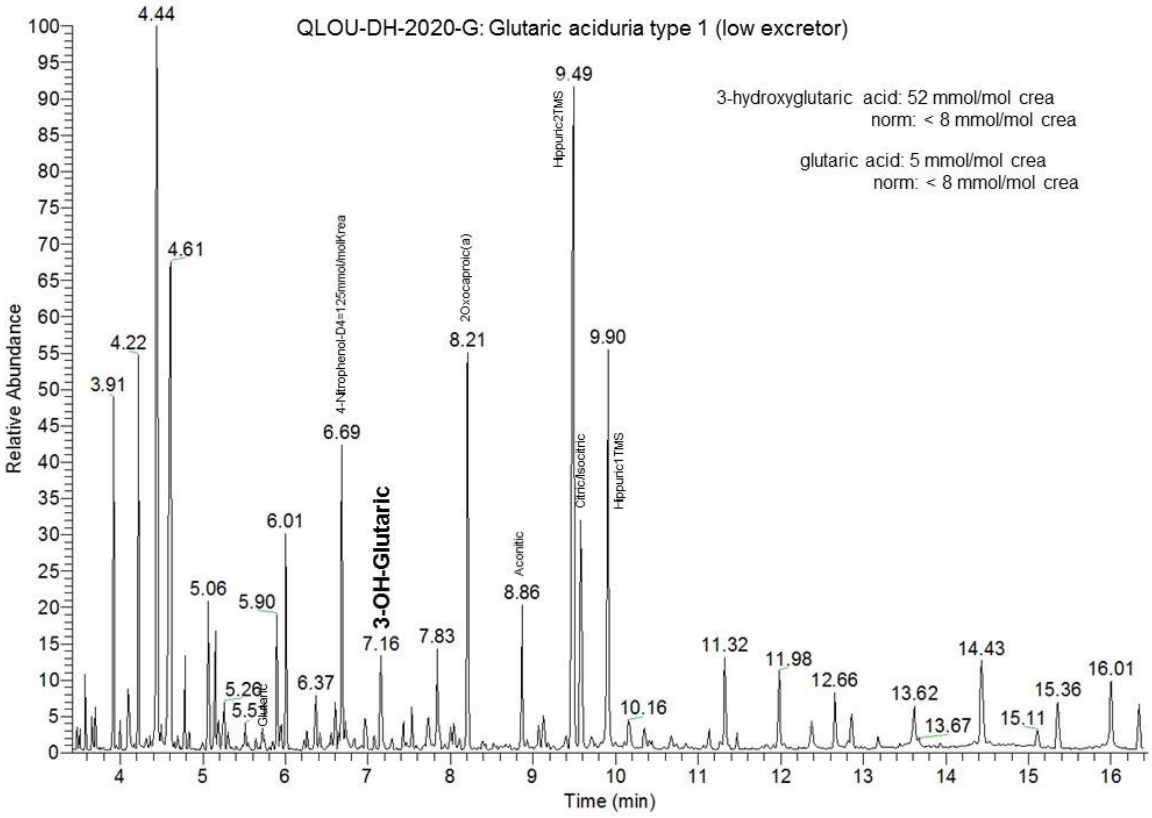
Analytical details: the organic acid profile showed a normal to low intensive peak for glutaric acid typical for the low excretor subgroup.
Glutaric acid was found normal by eighteen labs (25%) and elevated by nineteen labs (27%).

The key marker for the correct diagnosis was detection of 3-hydroxyglutaric acid. This metabolite is always an analytical challenge because of the structural similarity to 2-hydroxyglutaric acid. Careful inspection of the mass spectra is required for differentiation of these two metabolites.
Only fifty-five participants (55/71) reported an increase of 3-hydroxyglutaric acid.

[mmol/mol creatinine]	N	Median	SD
glutaric acid	20	5.0	9.07
3-hydroxyglutaric acid	28	32.0	25.1







Interpretation: 75% of the participants (53/71) reported the correct diagnosis whereas 15% (11/71) diagnosed a normal sample.

Overall impression: The general outcome for this sample was unexpectedly poor. Quite a number of laboratories seem to be unable to detect 3-hydroxyglutaric acid.

Analytical performance	77%
Interpretative performance	75%
Overall performance	75%

Critical error: In the SAB meeting in November, it was agreed that despite the rather low proficiency this sample should not be educational because glutaric aciduria type I is a treatable disease.

Laboratories that offer a clinical service should make sure that they would be able to find this diagnosis.
Therefore reporting a normal diagnosis without suggesting adequate further examinations was considered by the SAB as a critical error.

Five participants received a critical error for this sample.

Sample QLOU-DH-2020-H:

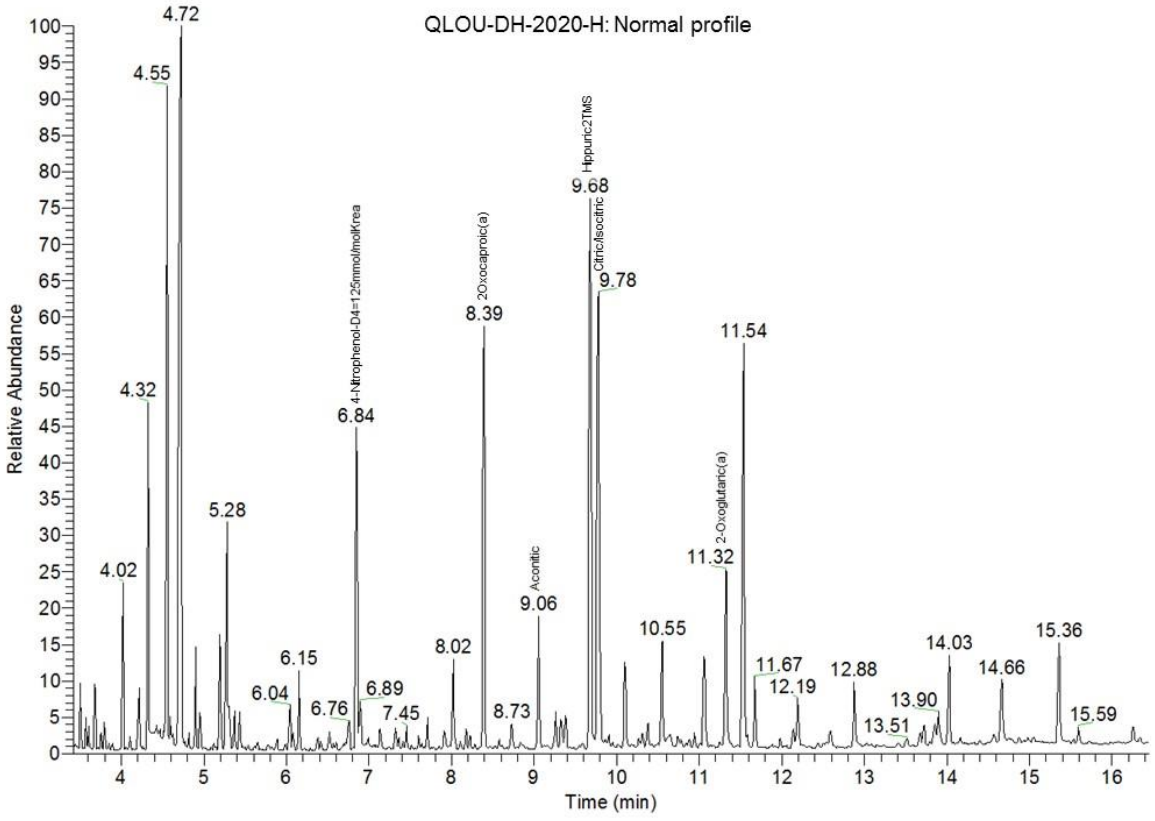
Patient details: 6-year-old boy with global developmental impairment

Known diagnosis: normal control sample

Analytical details and interpretation: clearly normal pattern of organic acids.

Sixty-seven participants regarded this sample to be normal.

The overall proficiency was 94%



Sample QLOU-DH-2020-I:

Patient details: 9-year-old girl, Syrian refugee with severe global impairment, ataxia and abnormal MRI

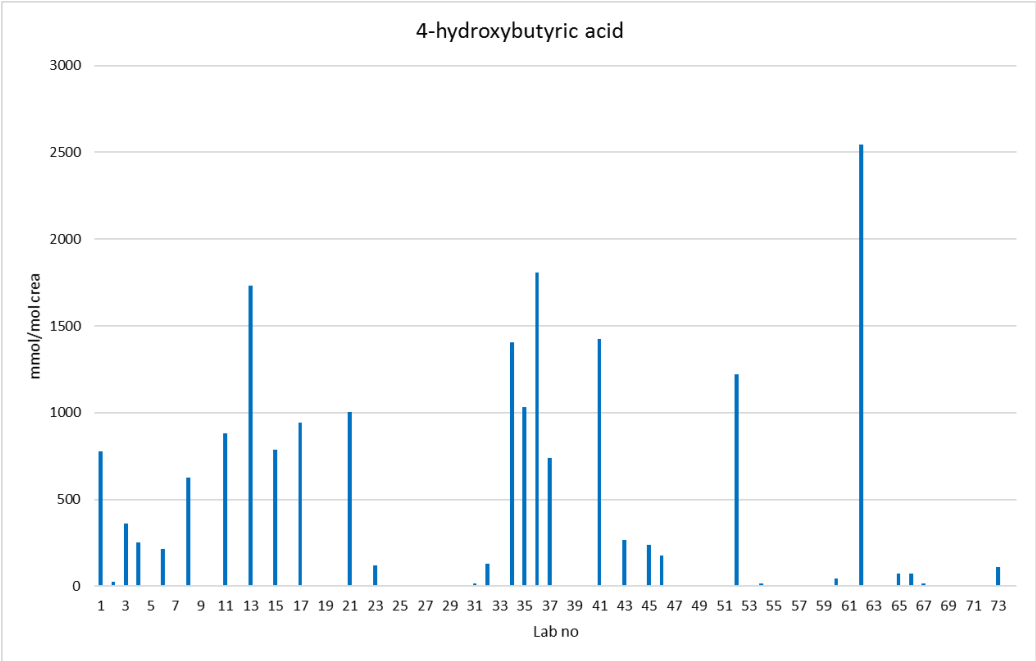
Known diagnosis: succinic semialdehyde dehydrogenase (SSADH) deficiency

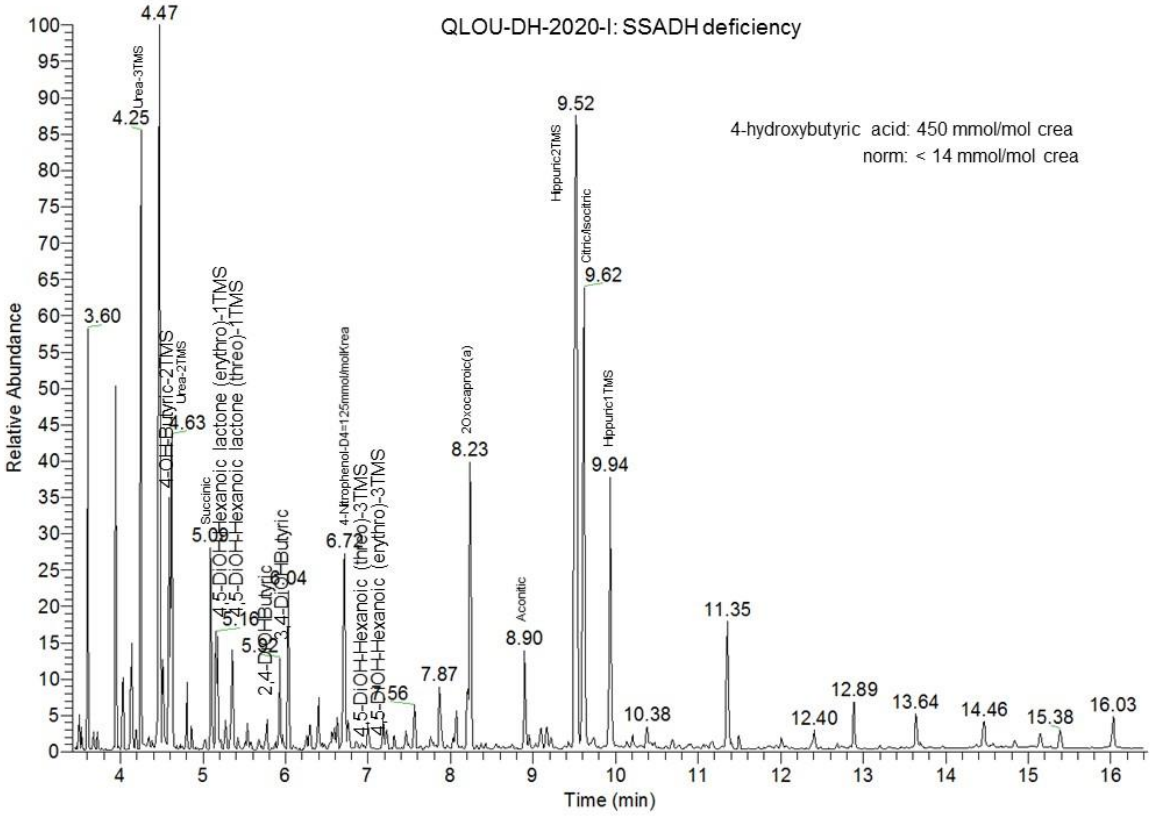
Analytical details: the chromatogram showed an abnormal excretion of 4-hydroxybutyric acid, 2,4-dihydroxybutyric acid, 3,4-dihydroxybutyric acid and 4,5-dihydroxyhexanoic acid.

The key metabolite for the correct diagnosis was 4-hydroxybutyric acid. Depending of the used method 4-hydroxybutyric acid can be obscured within the urea peak in the chromatogram.
Careful inspection of the chromatogram is required not to overlook this signal.

In the present sample, the high excretion of 4-hydroxybutyric acid resulted in a large peak, that could be clearly identified. Thus, it was not a problem for most participants (66/71).

[mmol/mol creatinine]	N	Median	SD
4-hydroxybutyric acid	31	265.0	643.37





Interpretation: 4-hydroxybutyric acid appears pathognomonic for SSADH deficiency. Therefore all participants that identified this metabolite diagnosed correctly SSADH deficiency.

Overall impression: The overall proficiency for this sample was quite good.

Analytical performance	93%
Interpretative performance	93%
Overall performance	93%

10. Scores of participants

The table below presents detailed scores and performance data for all participants.

Scores and performance data were confirmed by the Scientific Advisory Board meeting in November 2020.

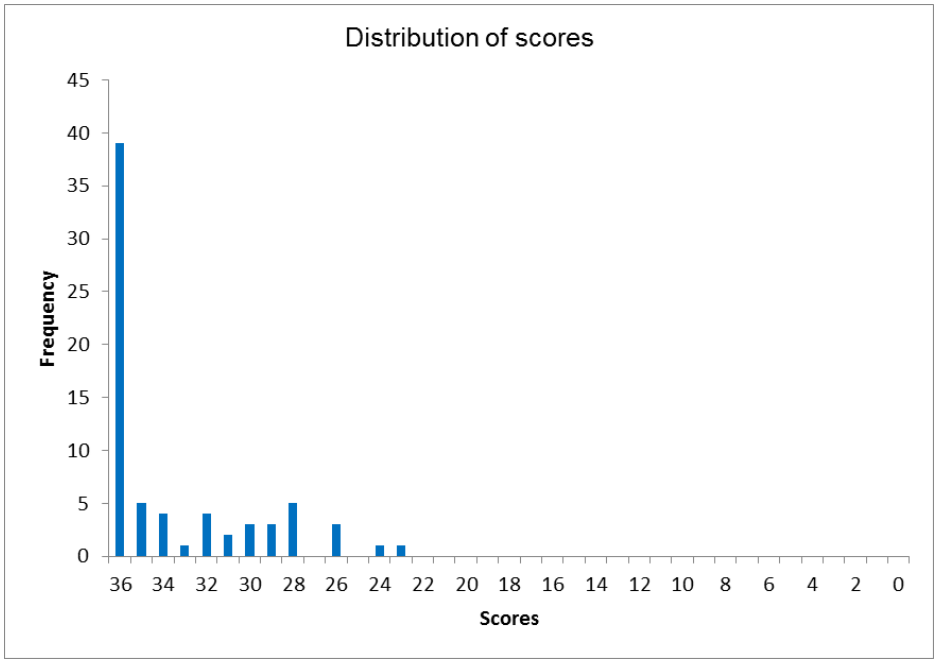
The anonymous data are accessible to all participants. Individual data are only visible to your laboratory.

Lab no	A	B	C	sum	D	E	F	sum	G	H	I	sum	Total score	Performance
1	4	4	4	12	3	4	4	11	4	4	4	12	35	
2	4	4	4	12	4	4	4	12	4	4	4	12	36	
3	4	4	4	12	2	4	4	10	0	4	4	8	30	
4	4	4	4	12	4	4	4	12	4	4	4	12	36	
5	4	4	4	12	4	4	4	12	4	4	4	12	36	
6	4	4	4	12	4	4	4	12	4	4	4	12	36	
7	2	4	4	10	4	4	4	12	0	4	4	8	30	2 CE
8	4	4	4	12	4	4	4	12	4	4	4	12	36	
9	4	4	4	12	4	4	4	12	4	4	4	12	36	
10	4	4	4	12	4	4	4	12	4	4	4	12	36	
11	4	4	4	12	3	4	4	11	4	4	4	12	35	
12	4	4	4	12	4	4	4	12	4	4	4	12	36	
13	4	4	4	12	4	4	4	12	4	4	4	12	36	
14	4	4	4	12	4	4	4	12	4	4	4	12	36	
15	4	4	4	12	3	4	4	11	4	4	4	12	35	
16	4	3	4	11	4	4	4	12	4	4	0	8	31	
17	4	4	4	12	4	4	4	12	4	4	4	12	36	
18	4	4	4	12	4	4	4	12	4	4	4	12	36	
19	4	4	4	12	4	4	4	12	4	4	4	12	36	
20	4	4	4	12	4	4	4	12	4	4	4	12	36	
21	4	4	4	12	4	4	4	12	4	4	4	12	36	
22	4	4	4	12	0	4	4	8	0	4	4	8	28	CE
23	4	4	4	12	4	4	4	12	4	4	4	12	36	

Lab no	A	B	C	sum	D	E	F	sum	G	H	I	sum	Total score	Performance
24	2	4	4	10	4	4	4	12	4	4	4	12	34	CE
25	4	4	4	12	4	4	4	12	4	4	4	12	36	
26	4	4	4	12	4	4	4	12	4	4	4	12	36	
27	4	4	0	8	4	4	4	12	4	2	4	10	30	CE
28	4	4	4	12	4	4	4	12	4	4	4	12	36	
29	4	4	0	8	2	4	4	10	2	4	4	10	28	CE
30	4	4	4	12	4	4	4	12	4	2	4	10	34	
31	4	4	4	12	4	4	4	12	4	4	4	12	36	
32	4	4	4	12	4	4	4	12	4	4	4	12	36	
33	4	4	4	12	4	4	4	12	0	4	4	8	32	
34	4	4	4	12	4	4	4	12	4	4	4	12	36	
35	4			4	4	4	4	12	4	4	4	12	28	
36	4	4	4	12	4	4	4	12	4	4	4	12	36	
37	4	4	4	12	4	4	4	12	4	4	4	12	36	
38														non-submitter
39	4	4	4	12	4	4	4	12	0	4	4	8	32	
40	4	4	0	8	4	4	4	12	0	4	4	8	28	2 CE
41	4	4	4	12	4	4	4	12	4	4	4	12	36	
42	4	4	4	12	3	4	3	10	3	4	4	11	33	
43	4	4	4	12	4	4	4	12	0	4	4	8	32	CE
44	4	4	4	12	4	4	4	12	4	4	4	12	36	
45	4	4	4	12	3	4	4	11	4	4	4	12	35	
46	4	4	4	12	4	4	4	12	4	4	4	12	36	
47	4	4	4	12	3	4	4	11	0	4	1	5	28	
48	4	4	4	12	4	4	4	12	4	4	4	12	36	
49														non-submitter
50	4	4	4	12	4	4	4	12	4	4	4	12	36	
51	2	4	4	10	4	4	4	12	1	4	1	4	28	CE
52	4	4	4	12	4	4	4	12	4	4	4	12	36	
53	4	4	4	12	4	4	4	12	4	4	4	12	36	
54	2	4	0	6	0	4	4	8	4	4	4	12	26	3 CE
55	4	4	4	12	1	4	4	9	0	4	4	8	29	CE

Lab no	A	B	C	sum	D	E	F	sum	G	H	I	sum	Total score	Performance
56	4	4	4	12	4	4	4	12	4	4	4	12	36	
57	4	4	4	12	4	4	4	12	4	4	4	12	36	
58	4	4	4	12	4	4	4	12	4	4	4	12	36	
59	4	4	4	12	4	4	4	12	2	4	4	10	34	
60	4	4	4	12	4	4	4	12	4	4	4	12	36	
61	4	4	4	12	4	4	4	12	4	4	4	12	36	
62	3	4	0	7	4	4	4	12	2	4	4	10	29	CE
63	4	4	4	12	4	4	4	12	4	4	4	12	36	
64	4	2	4	10	3	0	4	7	4	2	0	6	23	CE
65	4	4	4	12	4	4	4	12	4	4	4	12	36	
66	4	4	4	12	3	4	4	11	4	4	4	12	35	
67	4	4	4	12	4	4	4	12	2	2	4	8	32	
68	1	4	4	9	4	4	4	12	2	4	4	10	31	CE
69	1	4	4	9	4	4	4	12	0	4	4	8	29	2 CE
70														non-submitter
71	4	2	0	6	2	4	4	10	0	4	4	8	24	CE
72	4	4	4	12	4	4	4	12	4	4	4	12	36	
73	4	4	2	10	4	4	4	12	4	4	4	12	34	
74	1	4	4	9	4	4	4	12	1	4	0	5	26	CE

*) Educational sample
CE: Critical error
PP: Poor performance (on score)



Your laboratory scores for 2020:

ERNDIM Number:

Lab number in table:

Total score 2020: 36

11. Preview of the scheme in 2021

- The format of the QLOU 2021 scheme has been changed. In accordance with other qualitative ERNDIM schemes (diagnostic proficiency testing) the number of distributed samples has been reduced to six urine samples instead of nine as in the past years.
  The six samples are splitted in two rounds of three with two submission deadlines over the year.
  The number of normal samples are limited to two at the maximum.
- The annual report is intended to be produced automatically by the software developed by CSCQ.

17 February 2021

Dr. C. D. Langhans	**Dr. V. Peters**	**Prof. Dr. G. F. Hoffmann**
Scientific Advisor		*Director*
Laboratory of Metabolic Diseases	*Laboratory of Metabolic Diseases*	*Department of General Paediatrics*

Please note:
This annual report is intended for participants of the ERNDIM QLOU scheme. The contents should not be used for any publication without permission of the scheme advisor

APPENDIX 1. Change log (changes since the last version)

Version Number	Published	Amendments
1	17 February 2021	2020 annual report published

END