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### ERNDIM QAP for qualitative urinary organic acid analysis Annual Report 2009 (Sheffield)

#### Participation

Active participants (reporting on at least one set of samples in the year) are shown in Table 1. The number of participants continues to grow. New applicants are distributed between the Sheffield and Heidelberg qualitative urinary organic acid schemes which are run separately. The two organising laboratories each participate in the other's scheme.

**Table 1: Geographical distribution of participants**

	2009	2008	2007	2006	2005	2004
Argentina	2	1	2	1	1	1
Australia	6	6	6	6	6	6
Belgium	7	5	5	4	6	6
Brazil	1	1	1	1	1	1
Canada	1	1	1	1	0	0
Columbia	1	-	-	-	-	-
Democratic Republic of China	1	1	1	1	1	1
Finland	1	1	1	1	1	1
France	13	14	13	11	12	13
Germany†	1	1	1	1	1	1
Israel	3	2	2	2	2	2
Japan	1	1	1	1	0	0
Lebanon	1	1	1	1	1	1
Malaysia	3	3	2	2	1	1
New Zealand	1	1	2	2	1	0
People's Republic of China	7	6	6	4	4	4
Portugal	2	2	2	2	2	2
Republic of Korea	1	1	1	1	1	0
Republic of Ireland	1	1	1	1	1	1
Republic of Singapore	1	1	-	-	-	-
South Africa	1	1	-	-	-	-
Spain	6	5	5	5	5	5
Turkey	2	2	-	-	-	-
United Kingdom	20	20	20	21	21	21
USA	4	4	4	2	1	0
Venezuela	1	1	1	1	0	0
<b>TOTAL</b>	<b>89</b>	<b>83</b>	<b>79</b>	<b>72</b>	<b>69</b>	<b>67</b>

† Heidelberg laboratory

## Samples and results

Three sets of three samples each (total 9; sample numbers 169-177) were dispatched together in April 2009. Seventy-eight laboratories (88%) returned results for all three circulations, three returned for only two, two laboratories made only a single return, and six made no return.

## Instrumentation

Currently only one active participant is relying on gas-chromatography alone, the remainder performing their analyses wholly or in part by GC-MS.

## Scoring of results

To enable data reduction the results were scored as shown below:

Satisfactory	2	Helpful but incomplete	1
Unhelpful	0	Slightly misleading	-1
Misleading	-2	Failing to return an individual result	0

Two points are deducted for transposed sample numbers.

**Table 2: Distribution of scores for individual samples** (laboratories making returns)

Sample	Scores				
	-2	-1	0	1	2
169 Ten months old boy. ? delayed mental development: Orotic aciduria type 1 due to uridine monophosphate synthase deficiency	16	8	-	1	57
170 Three-year-old boy, intestinal malabsorption: Normal	1	-	2	1	78
171 Previous hypoglycaemic attack following a fever: Non-crisis medium chain acyl CoA dehydrogenase (MCAD) deficiency	4	-	-	1	77
172 10-year-old boy. Autistic spectrum disorder: Normal	-	1	6	-	73
173 3-month-old girl. Poor feeder with frequent vomiting: Isovaleric acidaemia	-	-	-	-	80
174 6-year-old boy. Developing facial dysmorphism: Normal	1	1	4	5	69
175 18-month old boy. Younger sib diagnosed with riboflavin-responsive multiple acyl-CoA dehydrogenase deficiency: Multiple acyl-CoA dehydrogenase deficiency	5	1	-	2	72
176 Ten-day-old baby. Not feeding, acidotic: Methylmalonic aciduria	-	-	-	-	80
177 Ten-year-old girl, developing ataxia: Normal	-	8	2	1	69

**Table 3: Cumulative scores for 2007 - 2009 (current Sheffield participants only)**

Laboratory OA Number	2009			2008		2007		2007-9
	No. of returns	Late Returns	Total score	No. of returns	Total score	No. of returns	Total score	Average score*
3	3	0	13	3	14	3	16	1.65
4	3	0	9	3	14	3	16	1.50
5	3	0	16	3	16	3	10	1.62
6	3	0	18	3	18	3	16	2.00
7	3	0	18	3	14	3	16	1.85
9	3	0	11	3	15	3	16	1.62
10	3	0	15	3	16	3	16	1.81
11	3	0	12	3	14	3	16	1.62
12	3	0	18	3	18	3	16	2.00
13	3	0	18	3	16	3	16	1.92
14	3	0	18	3	18	3	16	2.00
15	3	0	18	3	14	3	16	1.85
17	3	0	17	3	18	3	15	1.92
18	3	0	18	3	18	3	16	2.00
19	2	0	10					
21	3	3	14	3	18	3	16	1.85
24	3	0	18	3	18	3	16	2.00
25	3	0	18	3	14	3	16	1.85
26	3	0	18	3	18	3	15	1.96
27	3	0	18	3	16	3	16	1.92
28	3	1	8	3	6	3	13	1.04
29	3	0	18	3	17	3	14	1.88
31	3	1	18	3	17	3	14	1.88
32	3	0	18	3	15	3	16	1.88
35	3	0	18	3	18	3	16	2.00
38	3	0	18	3	18	3	16	2.00
42	3	0	15	3	18	3	16	1.88
44	3	0	18	3	18	3	15	1.96
48	3	0	18	3	16	3	16	1.92
49	3	0	18	3	18	3	16	2.00
51	3	1	18	3	17	3	16	1.96
52	3	0	18	3	18	3	15	1.96
65	3	1	15	3	18	3	16	1.88
66	3	0	18	3	18	3	16	2.00
83	3	0	17	3	15	3	16	1.85
85	3	0	18	2	12	3	16	2.00
86	3	0	18	3	18	3	16	2.00
88	3	0	18	3	18	3	16	2.00
92	3	0	18	3	18	3	11	1.81
93	3	0	17	3	14	3	16	1.81
94	3	1	14	3	17	3	16	1.81
96	3	0	14	3	18	3	16	1.85
98	3	0	14	3	17	3	16	1.81

Laboratory OA Number	2009			2008		2007		2007-9
	No. of returns	Late Returns	Total score	No. of returns	Total score	No. of returns	Total score	Average score*
101	3	0	18	3	18	3	16	2.00
102	3	0	18	3	18	3	13	1.88
104	3	1	18	3	18	2	10	2.00
106	3	0	16	3	18	3	16	1.92
108	3	0	15	3	13	3	14	1.62
111	3	0	18	3	16	3	16	1.92
113	3	1	3	3	14	3	10	1.04
114	3	0	14	3	8	3	10	1.23
119	3	0	18	3	18	3	16	2.00
120	3	0	18	3	16	3	10	1.69
126	2	1	9	3	14	3	11	1.48
128	3	1	13	1	2	2	5	1.18
130	3	0	14	3	17	3	16	1.81
132	3	0	14	3	16	3	16	1.77
135	3	1	18	3	17	3	14	1.88
137	3	0	18	3	18	3	16	2.00
138	3	0	9	2	10	3	15	1.48
139	3	0	15	3	16	3	14	1.73
140	3	0	16	3	18	3	14	1.85
142	3	0	18	3	13	3	16	1.81
143	3	0	18	3	13	3	11	1.62
144	3	0	14	3	18	3	14	1.77
146	3	1	12	3	13	2	8	1.43
147	3	1	15	3	9	3	16	1.54
148	3	0	18	3	13	2	10	1.78
149	3	0	14	3	11	3	16	1.58
150	3	0	14	2	10	3	12	1.57
151	1	0	6	1	4	3	16	1.86
152	3	2	-2	3	14	3	5	0.65
153	1	0	6	2	11	2	10	1.93
154	3	0	18	3	11			
155	3	0	18	3	18			
156	3	0	18	3	14			
157	3	0	6	3	8			
158	3	2	18	3	12			
159	3	0	15	3	16			
163	2	0	1					
164	3	0	16					
165	3	2	6					
166	3	2	18					
172	0	0	0					

\*The average score is **per sample reported**. The maximum score for 2007 was 16. For 2008 and 2009 the maximum scores were 18.

## Commentary

### *Certificates of Participation and Performance*

We are required to define “Participation” and “Satisfactory Performance” 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. Defining “Satisfactory Performance” is more problematical as in some years there are more difficult samples than in others. The longer-term average score (Figure 1) using a minimum of 1.4 may be a better guide. We have retained the same criteria for “Satisfactory Performance” in 2009 as in 2008. Thus a score of 11 or more based on three returns (maximum possible score 18), or of 7 or more where only two returns have been received (maximum possible score 12) has been classed as satisfactory. We will be sending individual letters, drawing attention to areas that appear particularly problematical, to laboratories failing these formal “Satisfactory Performance” criteria. However, such criteria are always somewhat arbitrary and in practice even a single missed or wrong diagnosis can be highly damaging. Thus the reason(s) for failure to correctly report on any of the samples in the scheme should be investigated locally and appropriate remedial action taken.

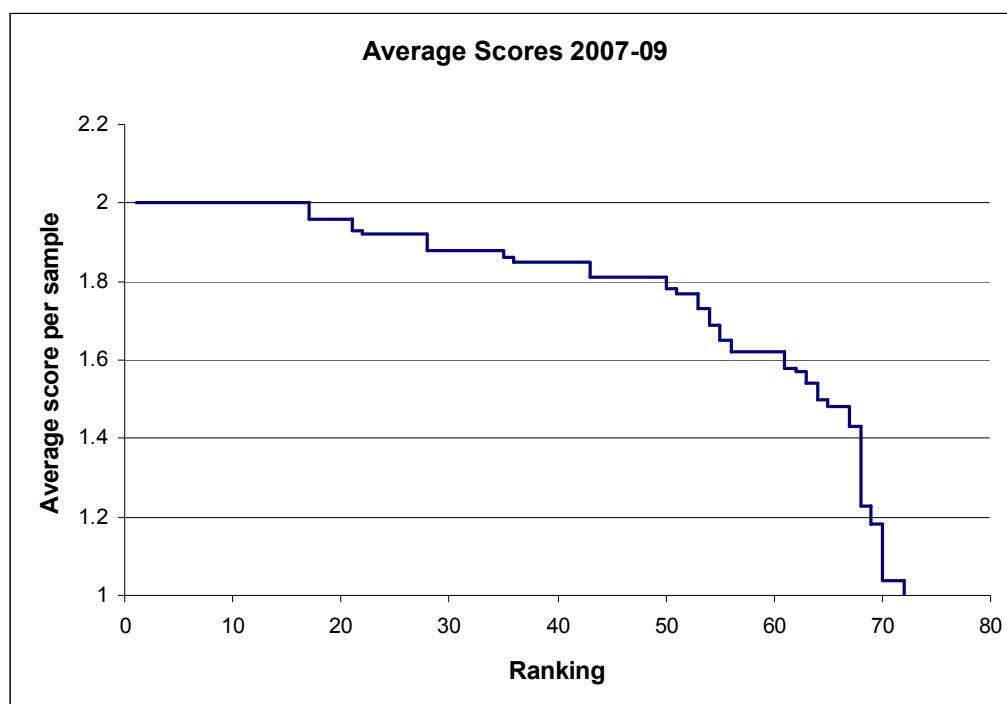


Figure 1: Distribution of average scores per sample, 2007-2009.

### *Communication*

For 2009 we sent the entire set of nine urine samples as a single consignment, to be analysed and reported in three sets. We sent out E-mail reminders to participants whose reports were outstanding after the closing dates. This revealed that a small number of returns had indeed gone missing in the mail and that a slightly larger number of laboratories had overlooked the closing date or lost their response forms – a disadvantage of sending all the samples out together.

We have repeated this procedure with the 2010 samples. The samples were dispatched during the third week in April and we also sent advisory E-mails. If you did not receive this E-mail please

send your current E-mail address to **Sheffield\_urine\_organics\_EQA@sch.nhs.uk** giving also your ERNDIM number.

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We thank Elaine Singleton for administering our participant database and dealing with the returns, and Joyce Allen for preparing and dispatching the samples. We hope that you continue to find this scheme useful.

Yours sincerely

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**Scheme organisers**