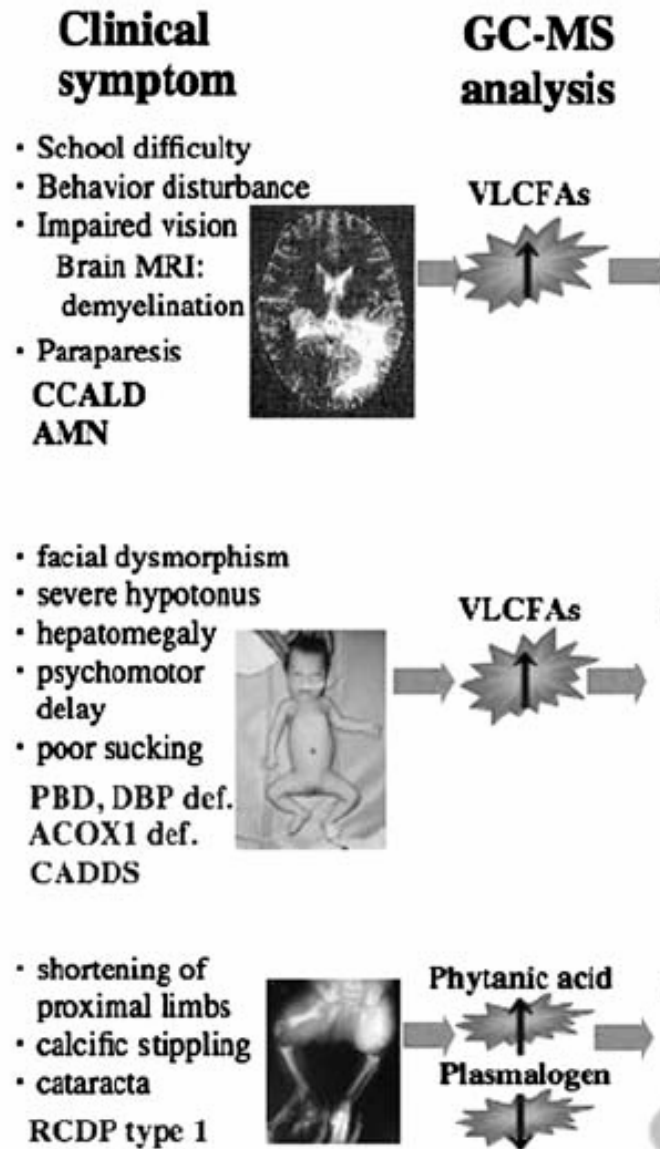


PERFORMANCE IN ERNDIM SPECIAL ASSAYS FOR PEROXISOMAL DISORDERS



Alberto Burlina, Padua

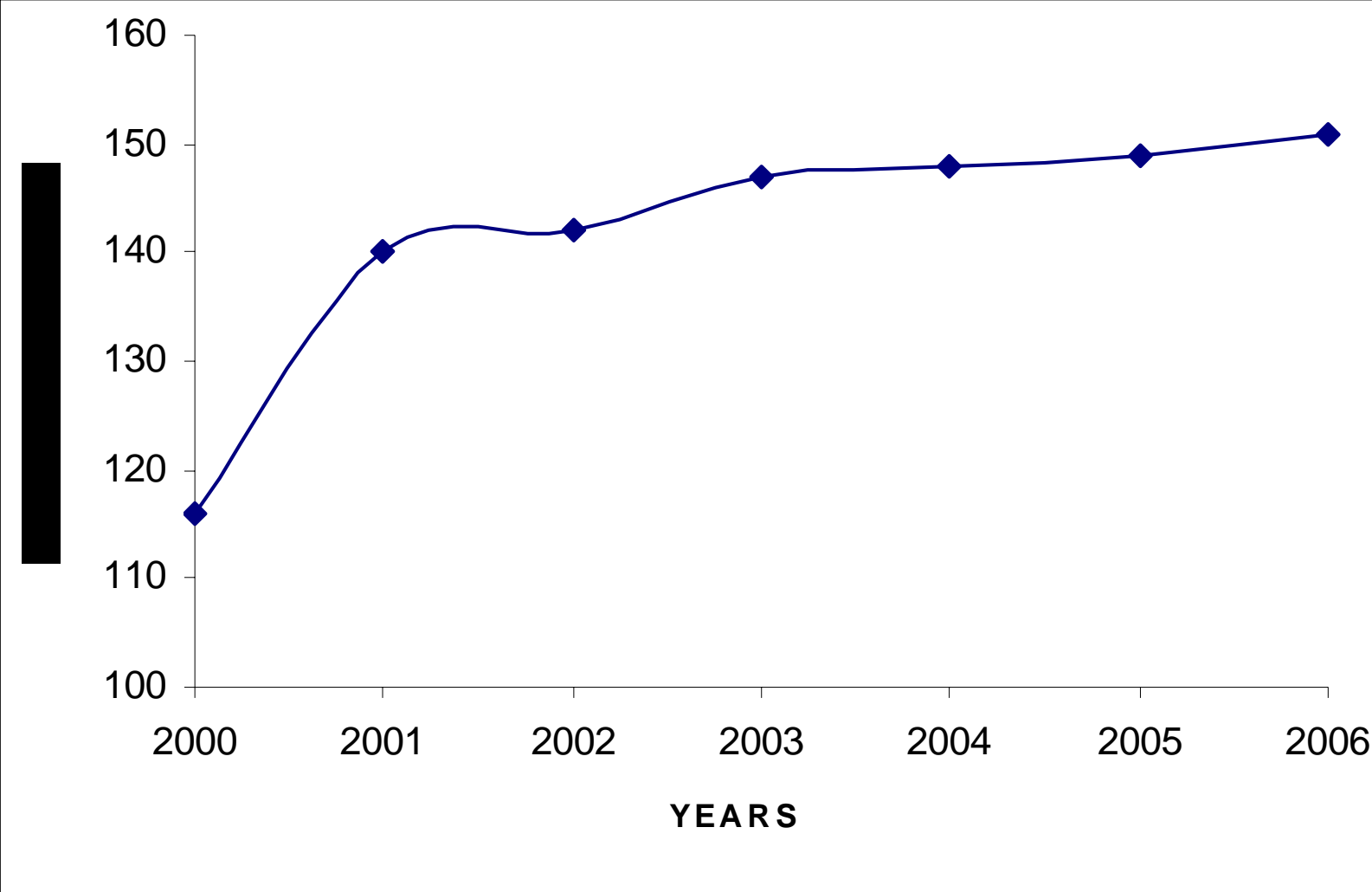
DIAGNOSTIC SYSTEM FOR PEROXISOMAL DISORDERS



ERNDIM QC Schemes

Schemes	Samples	Reporting Web-Site
Qualitative organic acids	Abnormal patient and control urines	Diagnosis & recommendations
Quantitative organic acids	8 freeze dried urines 15 organic acids added	OA concentrations
Quantitative amino acids	8 freeze dried plasmas 25 std. + 4 special amino acids	AA concentrations
Special assays urine	8 freeze dried urines	concentrations
Special assays plasma	8 freeze dried plasmas	concentrations
Purines / Pyrimidines	8 freeze dried urines	concentrations

PARTECIPANTS



ERNDIM Special Assay Schemes: Analytes 2007

Serum

3-OH Butyric acid

7-Dehydrocholesterol

Aceto acetate

C22:0 Behenic acid

C24:0 Lignoceric acid

C26:0 Cerotic acid

Carnitine free

Cis-4-deconic acid

Creatine

Homocysteine

Phenylalanine

Lactic acid

Phytanic acid

Pipecolic acid

Pyruvic acid

Uric acid

Control Special Assay in Serum

ANALYTE	Calculated consensus value	95% confidence interval
C22:0 Behenic acid (umol/L)	83	79-86
C24:0 Lignoceric acid	75	71-78
C26:0 Cerotic acid	5.8 nv : 0.79 (0.45-1.32)	5-7
Phytanic acid	18 nv 0-10	17-19
Pipecolic acid	22 nv 0.7-2.6	19-25

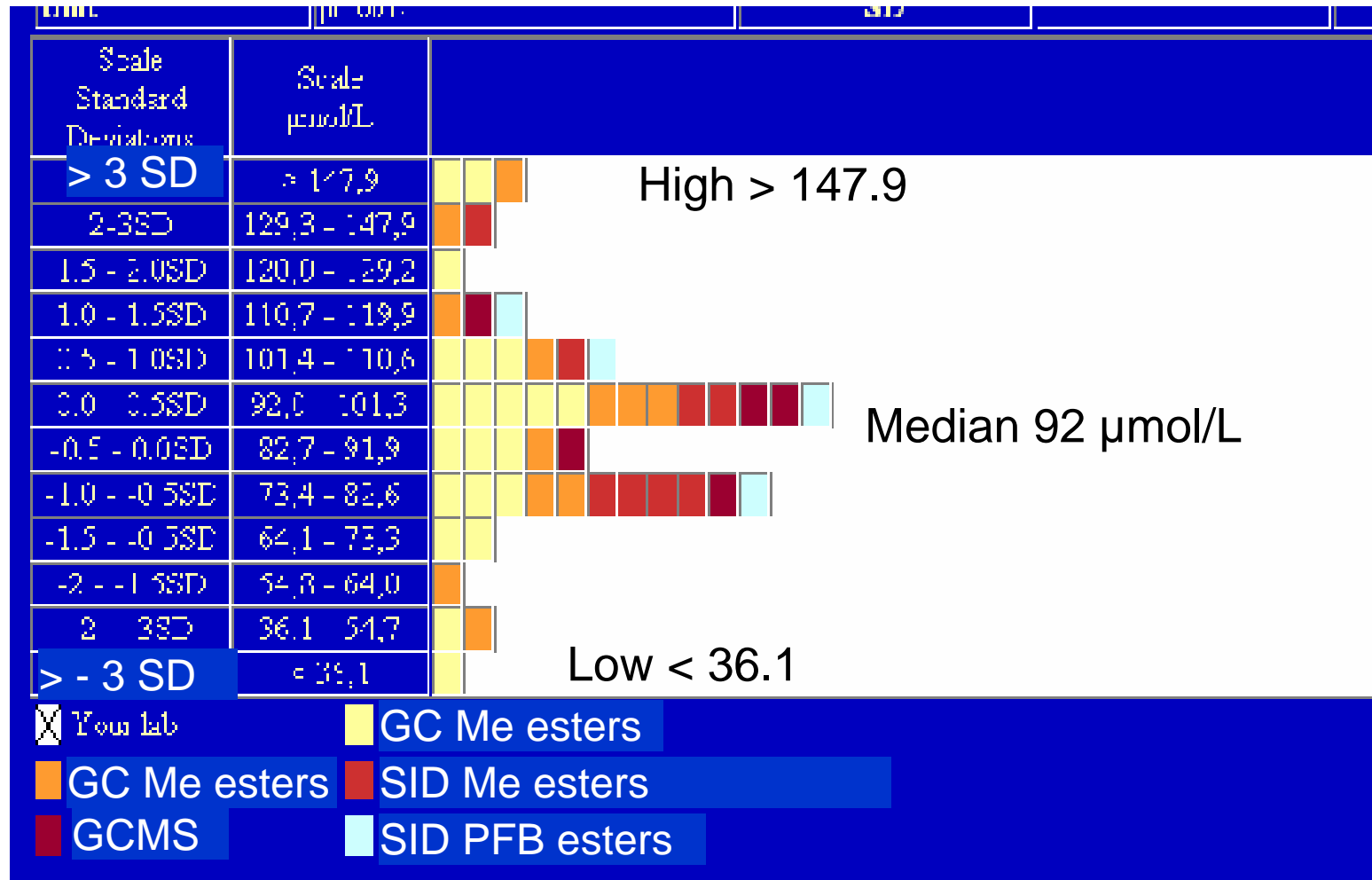
Lyophilized human serum to which the respective analytes of interest have been added to achieve an analytically and physiologically relevant level

BIOCHEMICAL CHARACTERISTICS IN PLASMA OF DIFFERENT PEROXISOMAL DISORDERS

	VLCFA	PHYTANIC	PRISTANIC
ZDSs	↑	N-↑	N-↑
AOXD	↑	N	N
DBPD	↑	N-↑	N-↑
X-ALD	↑	↑	N
RCDP Type 1	N-↑	N-↑	N
RD	N	↑	N
AMACRD	N	N- ↑	↑

Very Long Chain Fatty Acid Measurement in IEM

Cycle 2006 Sample Nr. SA-Serum Analyte C22:0 Behenic acid



Methodology and Quality Assurance in IEM Principles

Parameters for method validation

(details: ERNDIM web-site, <http://www.erndimqa.nl>)

- Specificity
- Selectivity
- Precision
 - Repeatability
 - Reproducibility
- Accuracy
- Recovery
- Range
- Linearity
 - Limit of detection
 - Limit of quantitation

ACCURACY**PRECISION****LINEARITY****RECOVERY****DATA ALL LABS**

	Consensus value	All labs	All labs (CV% duplicates)	All labs(r)	All labs (% added analyte)	Nr. of labs	Inter lab CV
C22:0 Behenic acid	83	84.0	8.6%	0.9317	106%	64	13.6%
C24:0 Lignoceric acid	75	74.7	9.6%	0.9450	72%	64	13.7%
C26:0 Cerotic acid	5.8	5.59	9.8%	0.9896	101%	65	18.9%
Phytanic acid	18	10.8	11.7%	0.9788	105%	58	26.4%
Pipecolic acid	22	21.9	10.7%	0.9918	108%	28	84.8%

Quality Assurance in IEM CONCLUSION



***"Ms. Johnson,
please tell our
new quality-
control inspector
that he's taking
his job a little too
seriously."***

From Fowler, Brisbane 2003

ANNUAL REPORT 2006

ACCURACY

good mean outcome

RECOVERY

not too far from 100%

PRECISION

overall precision 8.6-11.7%

LINEARITY

$R > 0.9799$

InterlabCV

lowest interlab cv for C22:0 behenic acid C24:0 lignoceric acid C26:0 cerotic acid phytanic acid

CROSS SECTIONAL RELATIONS

reproducibility within the labs is good (precision 9.5%)

linearity is good 0.9317-0.9918

recovery 72-108%

ERNDIM Special Assay Schemes: Analytes 2007

Urine

5-OH-Indolacetic acid
Carnitine free
Creatine
Creatinine
Guanidinoacetate
Homovanillic acid
Hydroxyproline
Lactic acid
Mucopolysaccharides
Orotic acid
Pipicolinic acid
Sialic acid
Succinylacetone
Thiosulphate
Uric acid

Serum

3-OH Butyric acid
7-Dehydrocholesterol
Aceto acetate
C22:0 Behenic acid
C24:0 Lignoceric acid
C26:0 Cerotic acid
Carnitine free
Cis-4-deconic acid
Creatine
Homocysteine
Phenylalanine
Lactic acid
Phytanic acid
Pipicolinic acid
Pyruvic acid
Uric acid