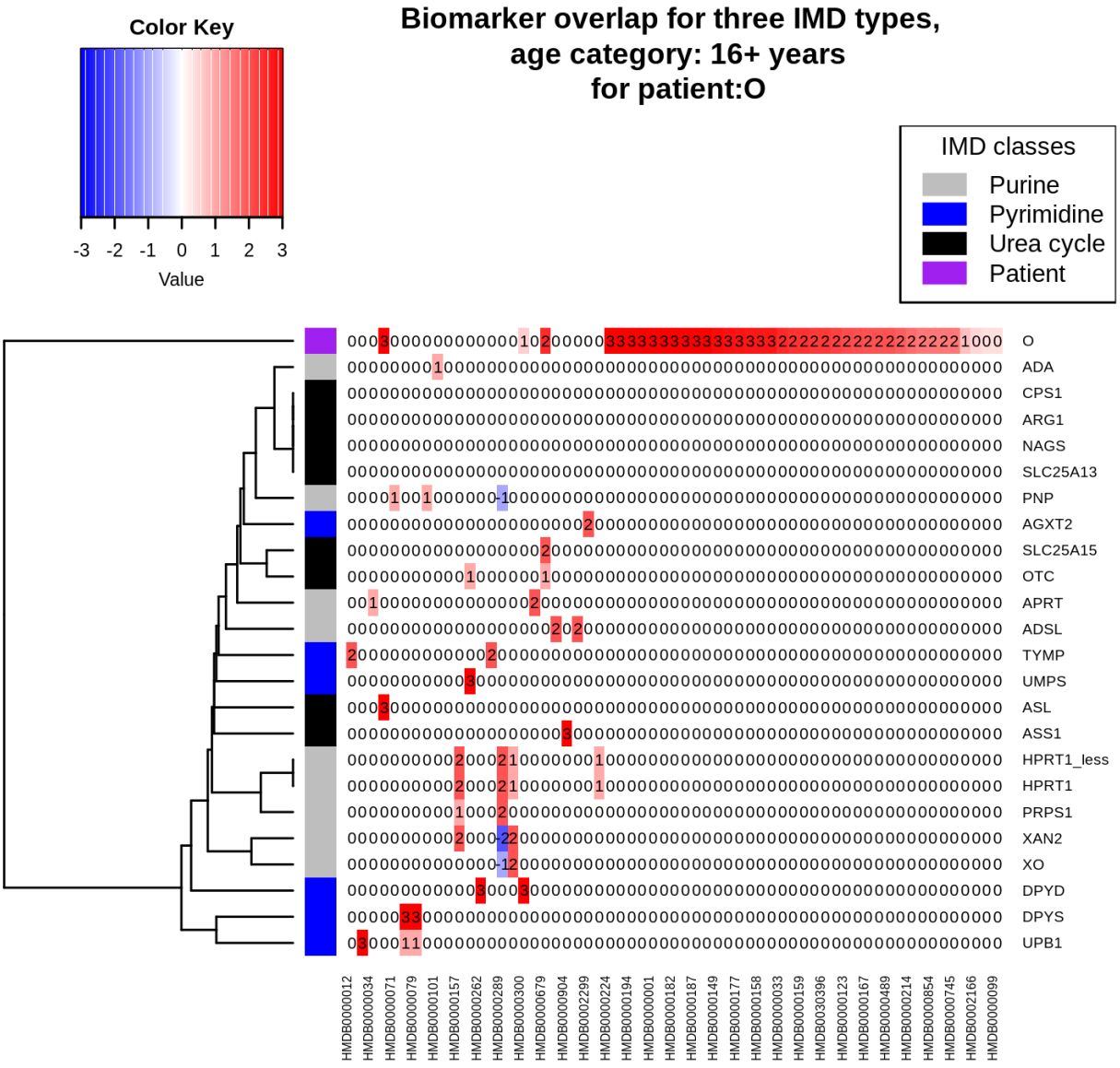
Selected Patient ID is: O , age is between: 16+ years old

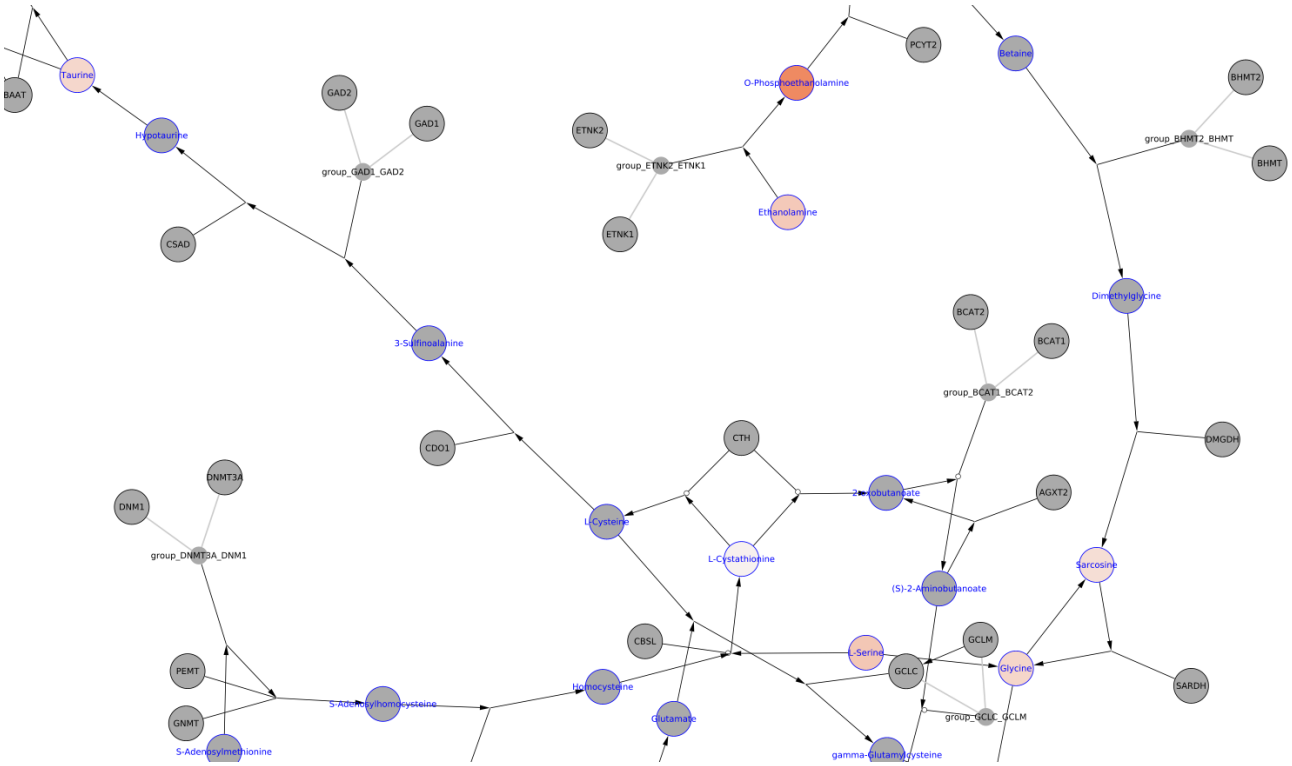
Relevant Biomarkers (out of 42):

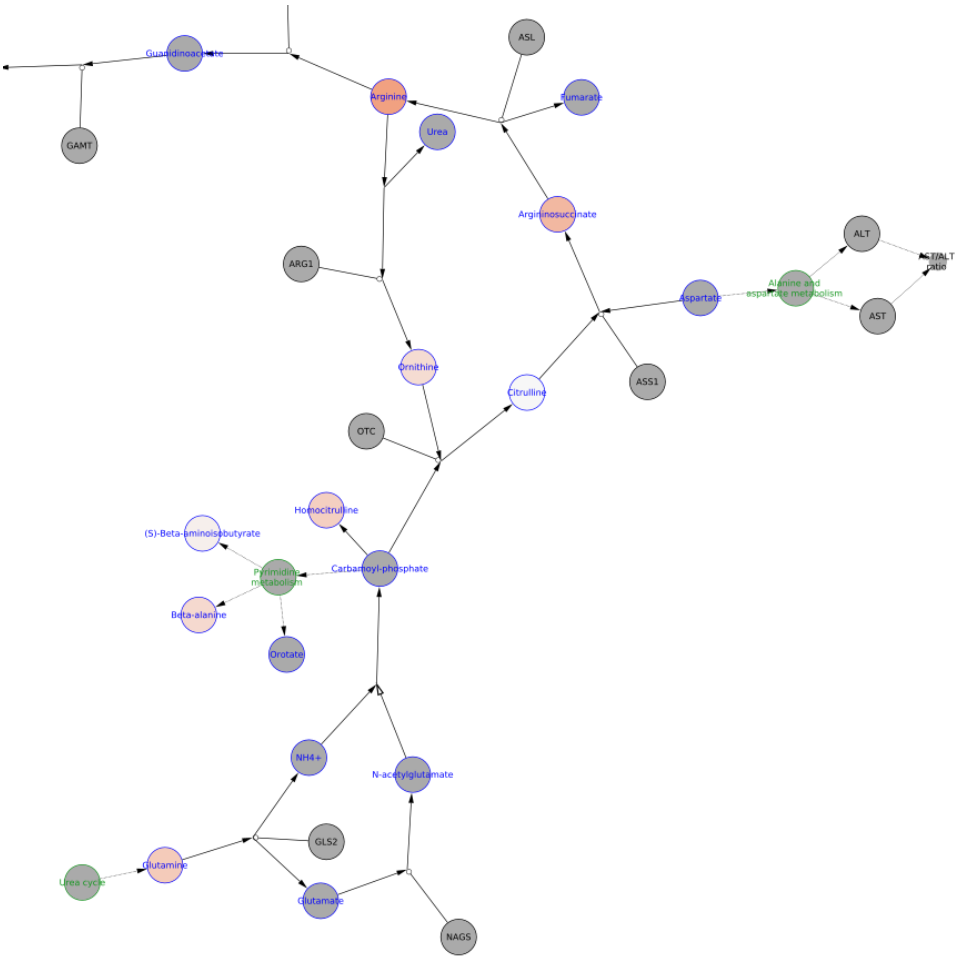
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
fosfoethanolamine	Phosphoethanolamine	CHEBI:17553	6.89
arginine	Arginine	CHEBI:32682	5.46
anserine	Anserine	CHEBI:18323	4.92
s-sulfocysteine	S-sulfocysteine	CHEBI:27891	4.00
argininobarnsteenzuur	Argininosuccinate	CHEBI:57472	3.98
1-methyl-histidine	1-Methyl-histidine	CHEBI:50599	3.67
hydroxylysine	Hydroxylysine	CHEBI:86498	3.66
3-methyl-histidine	3-Methyl-histidine	CHEBI:27596	3.47
alfa-aminoboterzuur	AABA	CHEBI:35621	3.39
lysine	Lysine	CHEBI:18019	3.38

Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
isoleucine	Isoleucine	CHEBI:17191	3.18
serine	Serine	CHEBI:17115	3.03
alfa-amino-adipinezuur	2-Aminoadipic acid	CHEBI:37024	2.98
ethanolamine	Monoethanolamine	CHEBI:16000	2.88
glutamine	Glutamine	CHEBI:58359	2.81
histidine	Histidine	CHEBI:15971	2.77
valine	Valine	CHEBI:16414	2.72
tyrosine	Tyrosine	CHEBI:17895	2.70
leucine	Leucine	CHEBI:15603	2.70
homocitrulline	Homocitrulline	CHEBI:58148	2.50



	pathway <chr>	pathwayTitle <chr>	CHEBIsInPWs <int>
1	WP3925	Amino acid metabolism	15
2	WP4583	Biomarkers for urea cycle disorders	9
3	WP3940	One-carbon metabolism and related pathways	7
4	WP4595	Urea cycle and associated pathways	7
5	WP661	Glucose homeostasis	6





Interpretation 1: ARG

Interpretation 2: Hypophosphatasia, Other metabolites due tubular dysfunction.

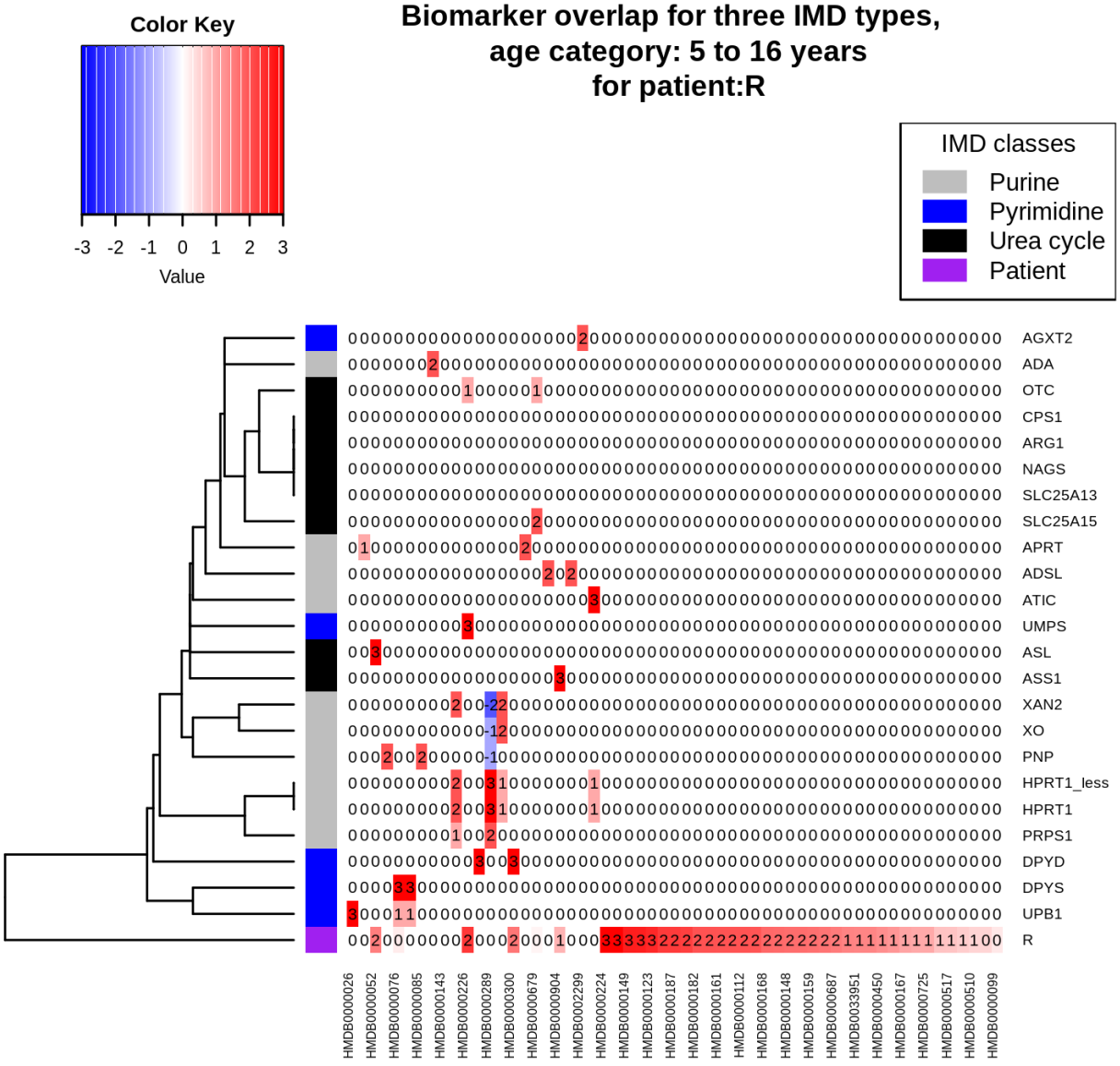
Final conclusion: Difficult to diagnose, Cycle between arginine, arginosuccinate and ornithine are scewing the expected biomarker pattern. Raised arginine (higher than ornithine) is unexpected for this disorder .

Selected Patient ID is: R , age is between: 5 to 16 years old

Relevant Biomarkers (out of 43):

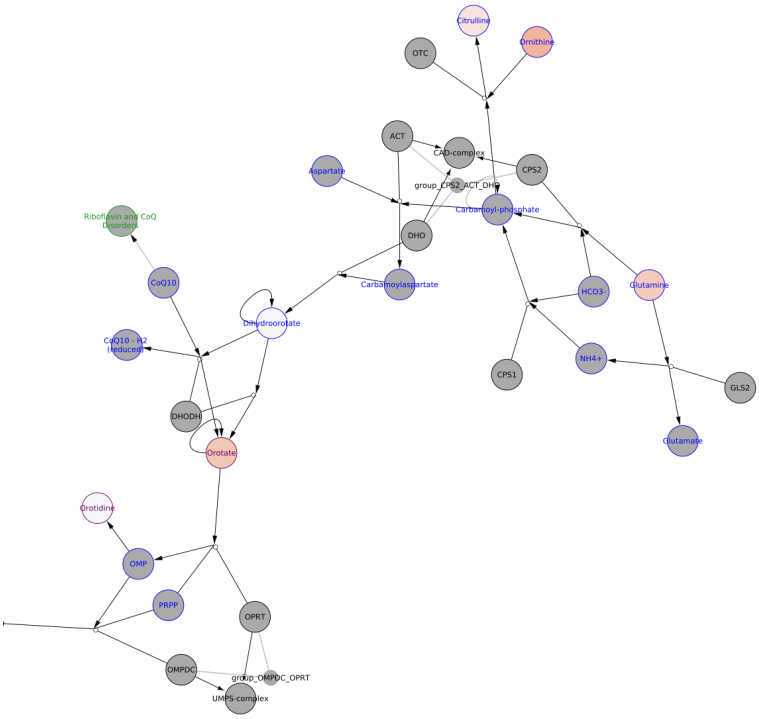
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
fosfoethanolamine	Phosphoethanolamine	CHEBI:17553	5.10
ornithine	Ornithine	CHEBI:46911	3.12
ethanolamine	Monoethanolamine	CHEBI:16000	2.64
asparaginezuur	Aspartic Acid	CHEBI:17053	2.63
glycine	Glycine	CHEBI:15428	2.52
orootzuur	Orotate	CHEBI:30839	2.32
histidine	Histidine	CHEBI:15971	2.31
serine	Serine	CHEBI:17115	2.28
isoleucine	Isoleucine	CHEBI:17191	2.25
lysine	Lysine	CHEBI:18019	2.02

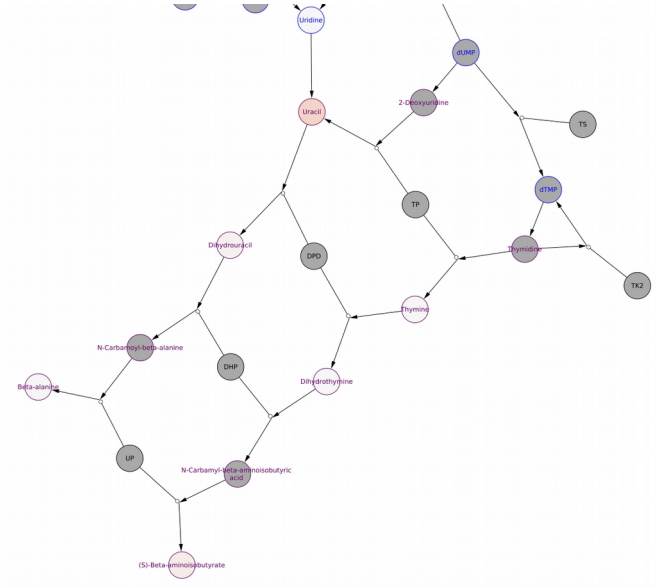
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
carnosine	Carnosine	CHEBI:15727	2.02
alanine	Alanine	CHEBI:16977	2.01
glutamine	Glutamine	CHEBI:58359	2.00
gamma-aminoboterzuur	GABA	CHEBI:16865	2.00
tyrosine	Tyrosine	CHEBI:17895	1.97
3-methyl-histidine	3-Methyl-histidine	CHEBI:27596	1.89
asparagine	Asparagine	CHEBI:17196	1.76
valine	Valine	CHEBI:16414	1.74
glutaminezuur	Glutamic acid	CHEBI:18237	1.69
cystine	Cystine	CHEBI:16283	1.69

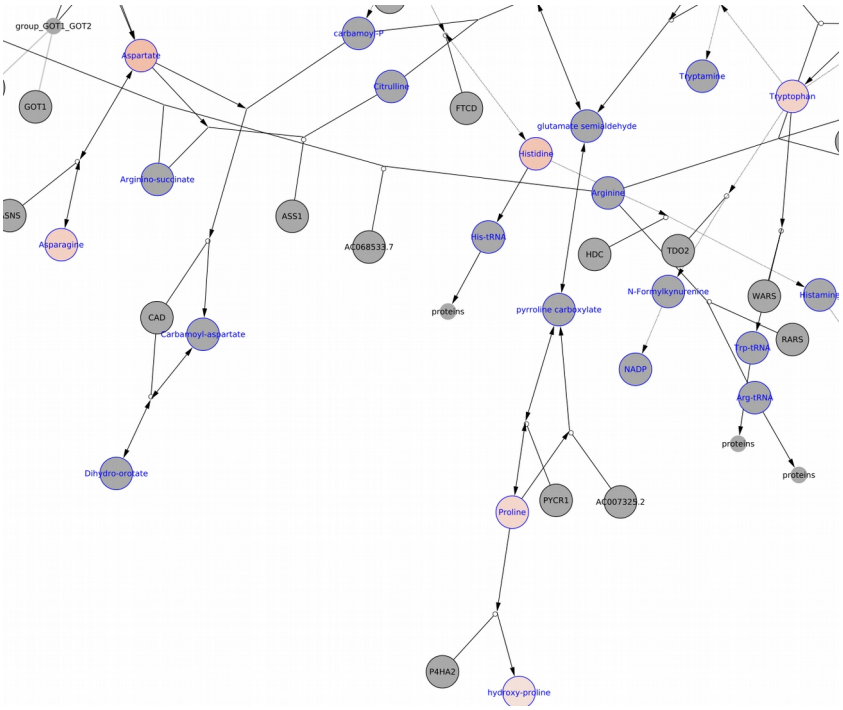


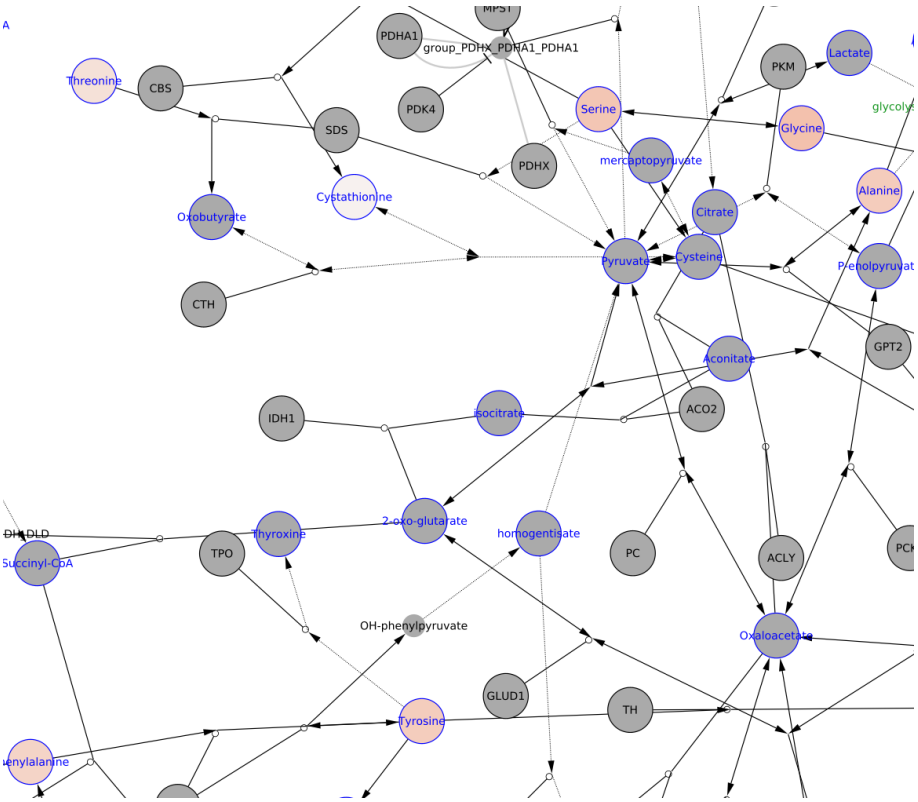
	pathway <chr>	pathwayTitle <chr>	CHEBIsInPWs <int>
1	WP3925	Amino acid metabolism	16
2	WP4583	Biomarkers for urea cycle disorders	9
3	WP4595	Urea cycle and associated pathways	9
4	WP4225	Pyrimidine metabolism and related diseases	7
5	WP661	Glucose homeostasis	6

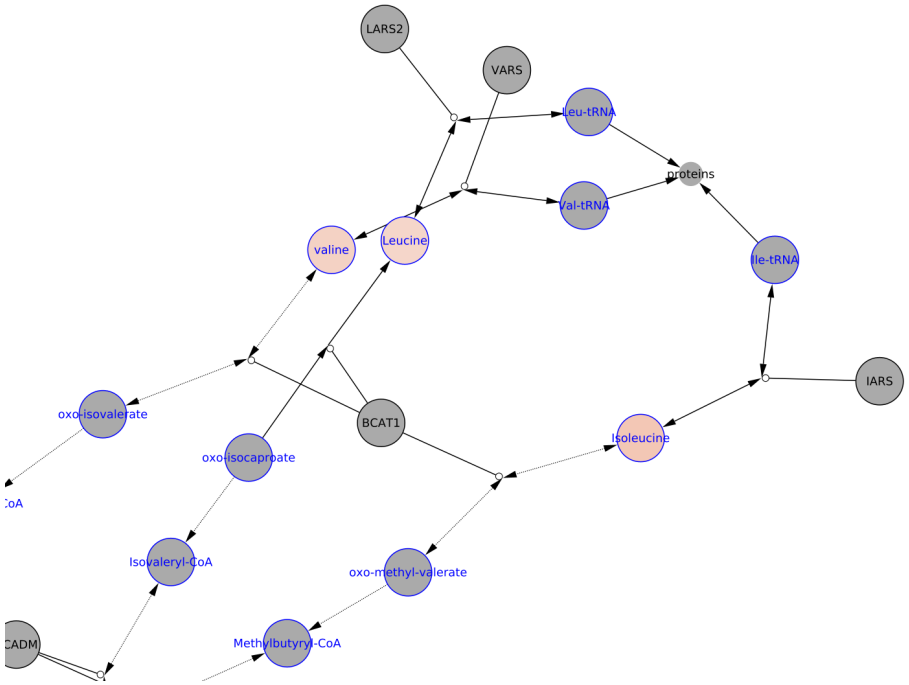
***Note that phosphoethanolamine, the biomarker with the highest change, is not part of the top 3 pathways.

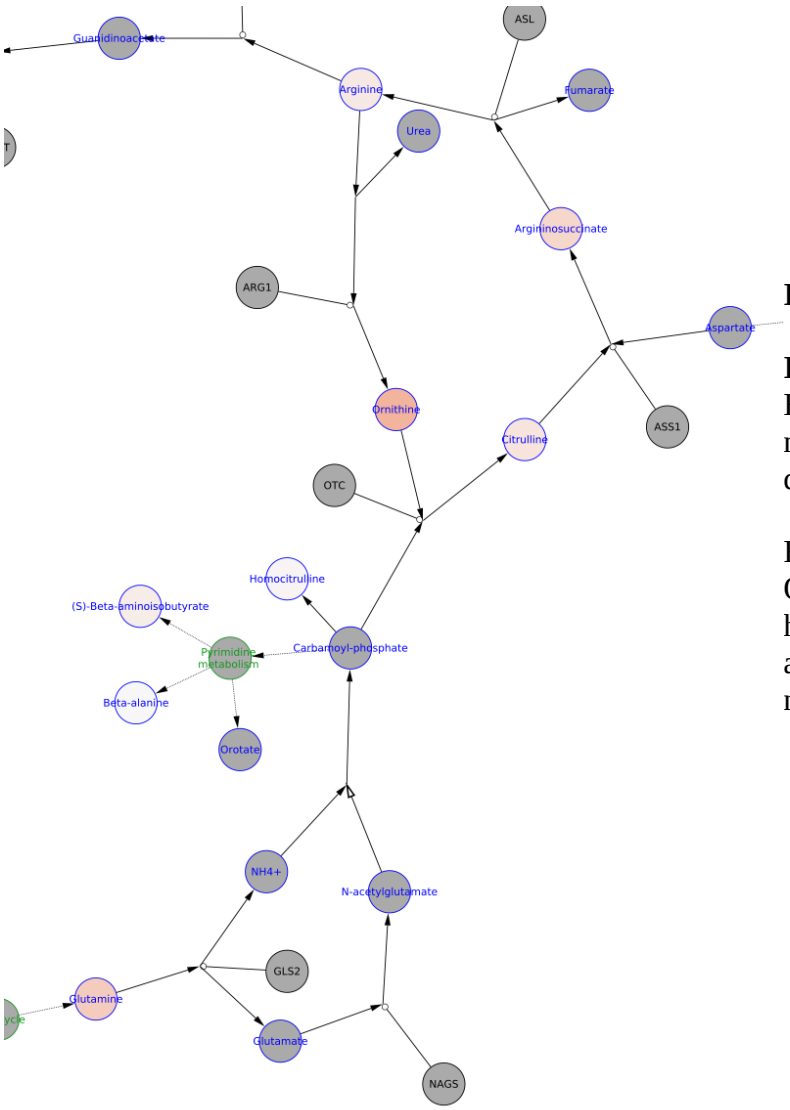







PDHA1
group_PDHX_PDHA1_PDHA1
Threonine
CBS
PDK4
SDS
Serine
PKM
Lactate
Glycine
PDHX
mercaptopyruvate
Alanine
Oxobutyrate
Cystathionine
Citrate
Pyruvate
Cysteine
Phenolpyruvat
CTH
GPT2
Aconitate
IDH1
Isocitrate
ACO2
2-oxo-glutarate
homogentisate
Thyroxine
TPO
PC
ACLY
Succinyl-CoA
OH-phenylpyruvate
Oxaloacetate
GLUD1
TH
Tyrosine


LARS2
VARS
Leu-tRNA
proteins
Val-tRNA
valine
Leucine
Ile-tRNA
IARS
oxo-isovalerate
BCAT1
Isoleucine
oxo-isocaproate
Isovaleryl-CoA
oxo-methyl-valerate
Methylbutyryl-CoA



Interpretation 1: OTC

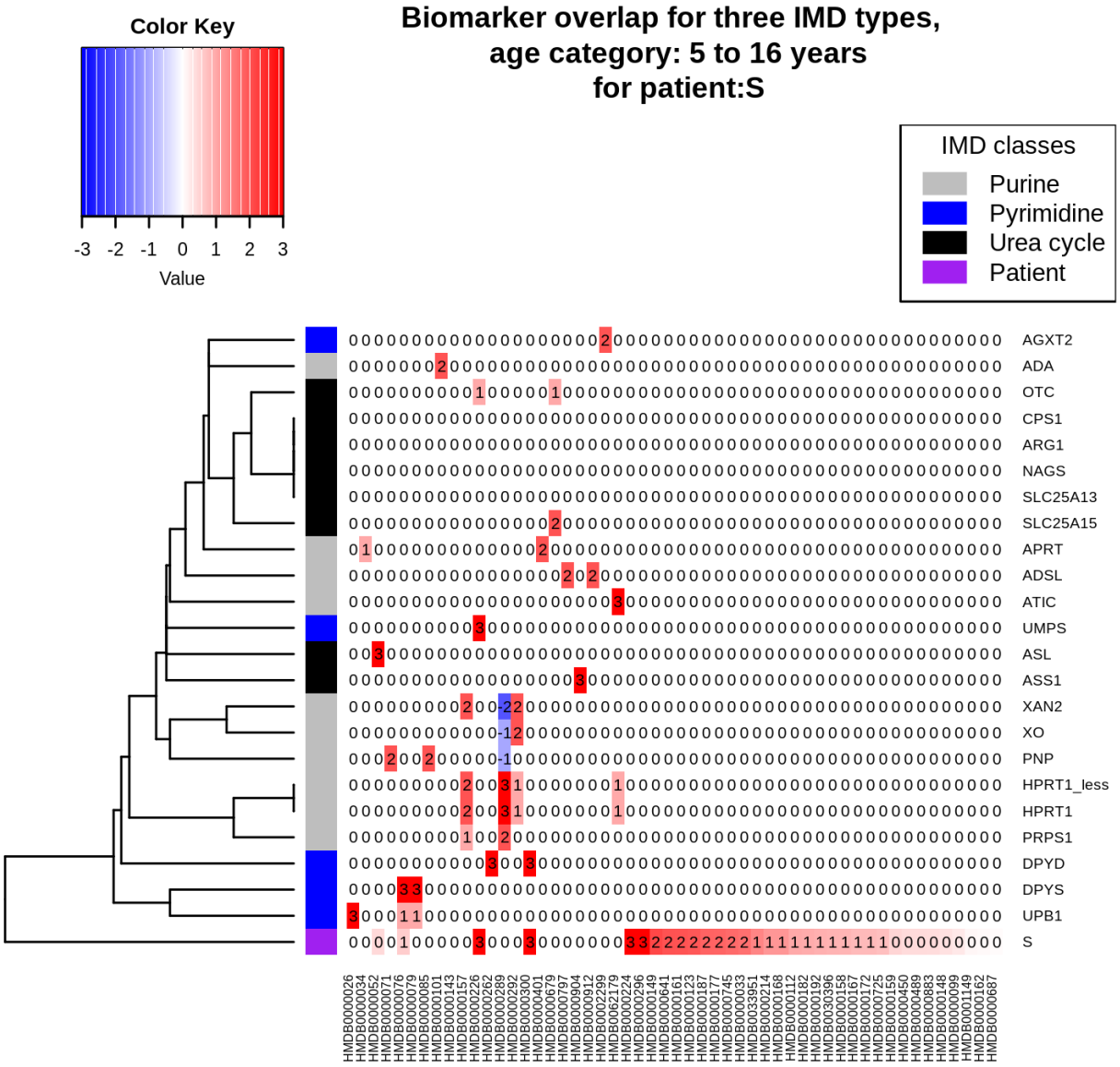
Interpretation 2:
Hypophosphatasia, other metabolites due tubular dysfunction.

Final conclusion: Indicative for OTC, requires more testing. OTC has a “tail” of biomarkers which are altered in the pyrimidine de novo part.

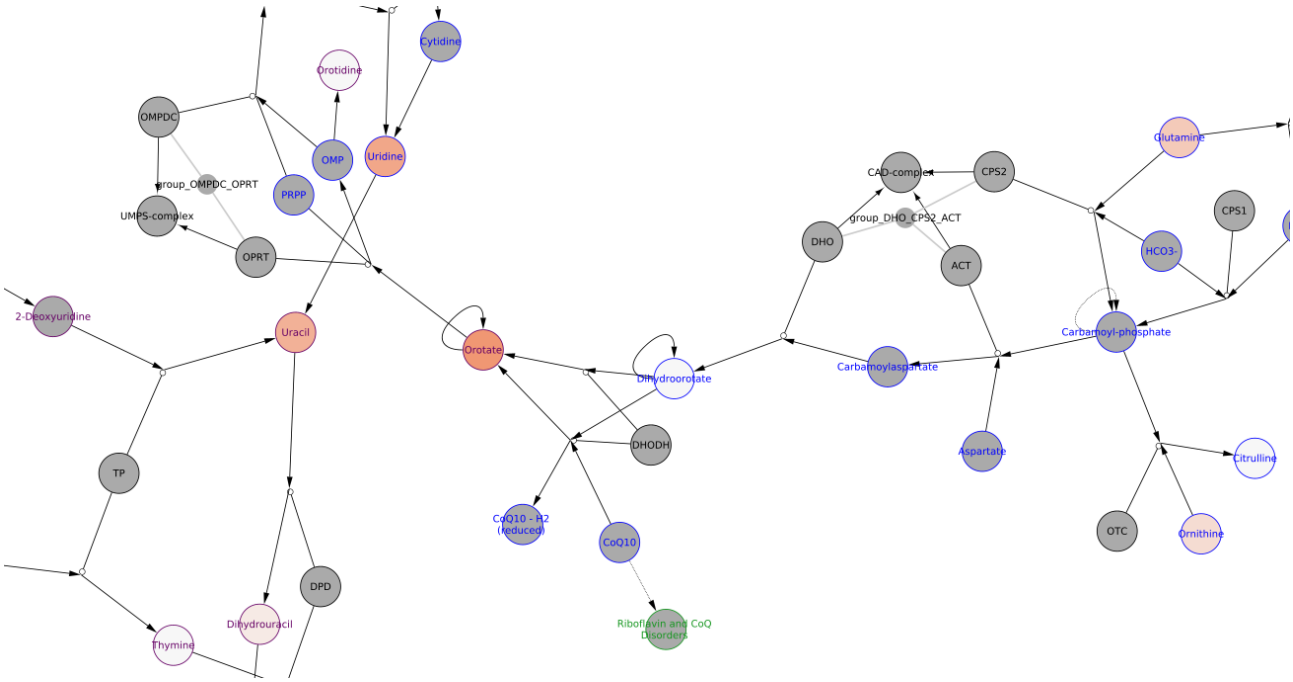
Selected Patient ID is: S , age is between: 5 to 16 years old

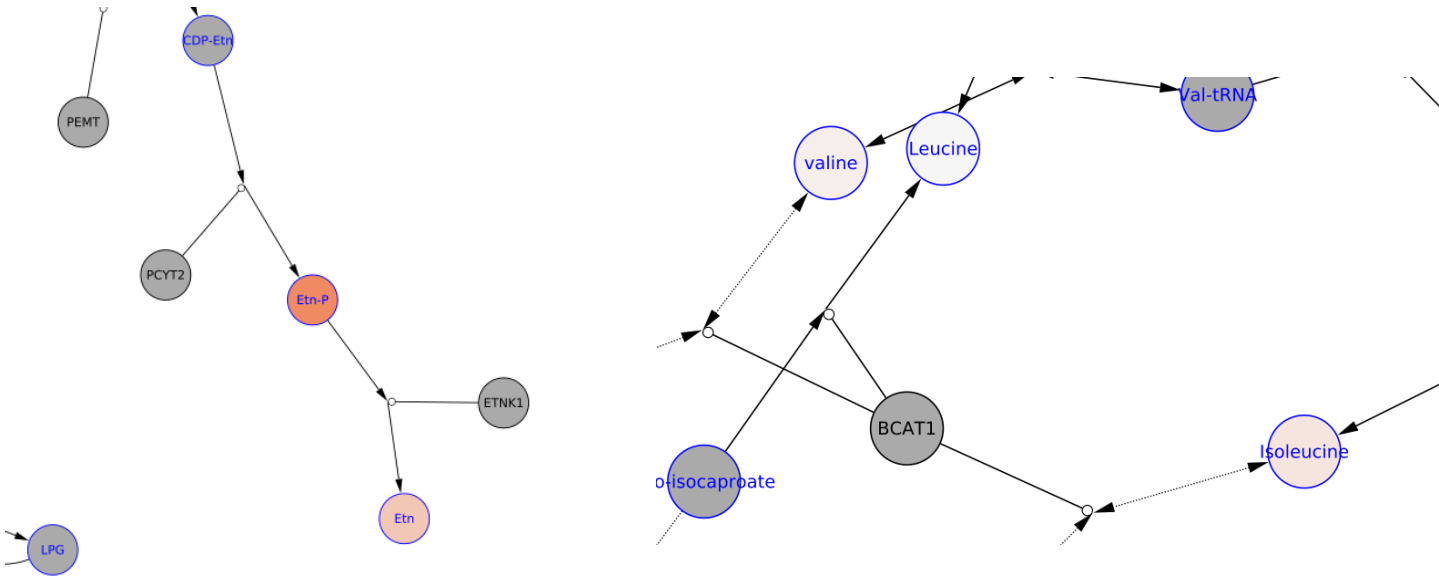
Relevant Biomarkers (out of 36):

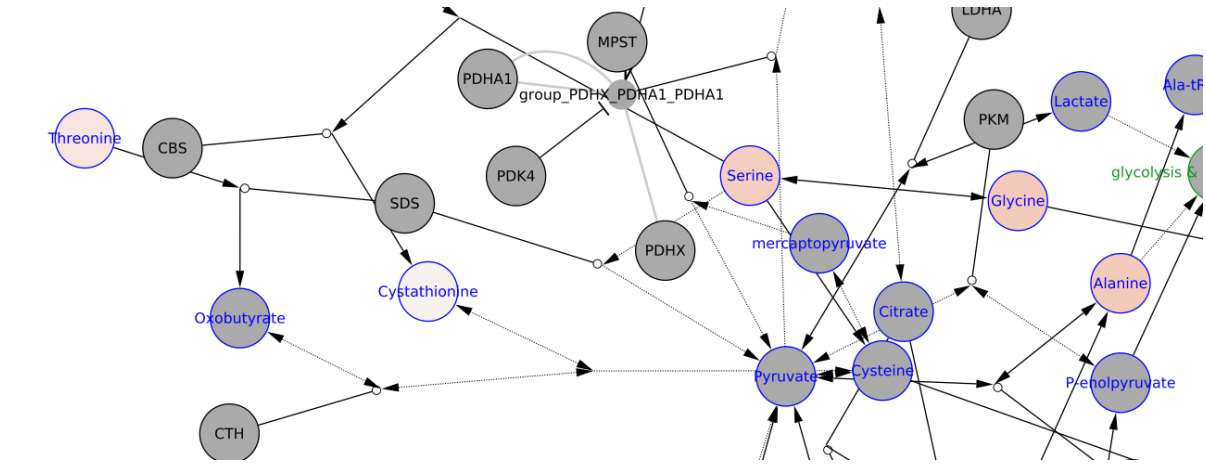
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
fosfoethanolamine	Phosphoethanolamine	CHEBI:17553	4.86
orootzuur	Orotate	CHEBI:30839	4.30
uridine	Uridine	CHEBI:16704	3.58
uracil	Uracil	CHEBI:17568	3.13
ethanolamine	Monoethanolamine	CHEBI:16000	2.15
glutamine	Glutamine	CHEBI:58359	2.02
alanine	Alanine	CHEBI:16977	2.01
glycine	Glycine	CHEBI:15428	1.95
serine	Serine	CHEBI:17115	1.82
histidine	Histidine	CHEBI:15971	1.80
homocarnosine	Homocarnosine	CHEBI:85981	1.74
carnosine	Carnosine	CHEBI:15727	1.65
methionine	Methionine	CHEBI:16811	1.42
ornithine	Ornithine	CHEBI:46911	1.22
asparagine	Asparagine	CHEBI:17196	1.21
3-methyl-histidine	3-Methyl-histidine	CHEBI:27596	1.19
gamma-aminoboterzuur	GABA	CHEBI:16865	1.00
lysine	Lysine	CHEBI:18019	0.96
cystine	Cystine	CHEBI:16283	0.92
tryptofaan	Tryptophan	CHEBI:16828	0.89

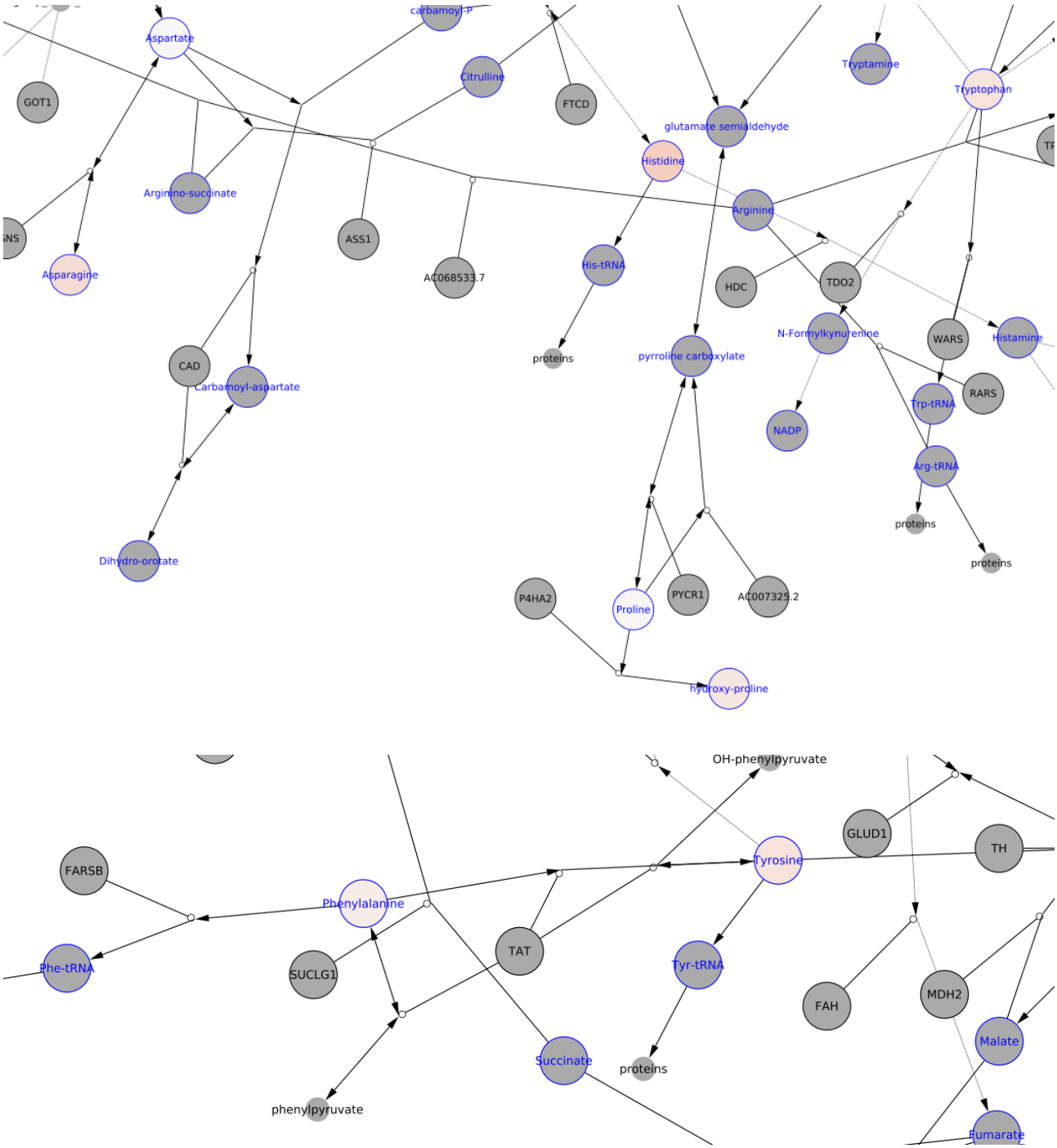


	pathway <chr>	pathwayTitle <chr>	CHEBIsInPWs <int>
1	WP3925	Amino acid metabolism	15
2	WP4595	Urea cycle and associated pathways	8
3	WP4225	Pyrimidine metabolism and related diseases	6
4	WP661	Glucose homeostasis	6
5	WP4583	Biomarkers for urea cycle disorders	5









Interpretation 1: OTC

Interpretation 2: Hypophosphatasia, other metabolites due tubular dysfunction.

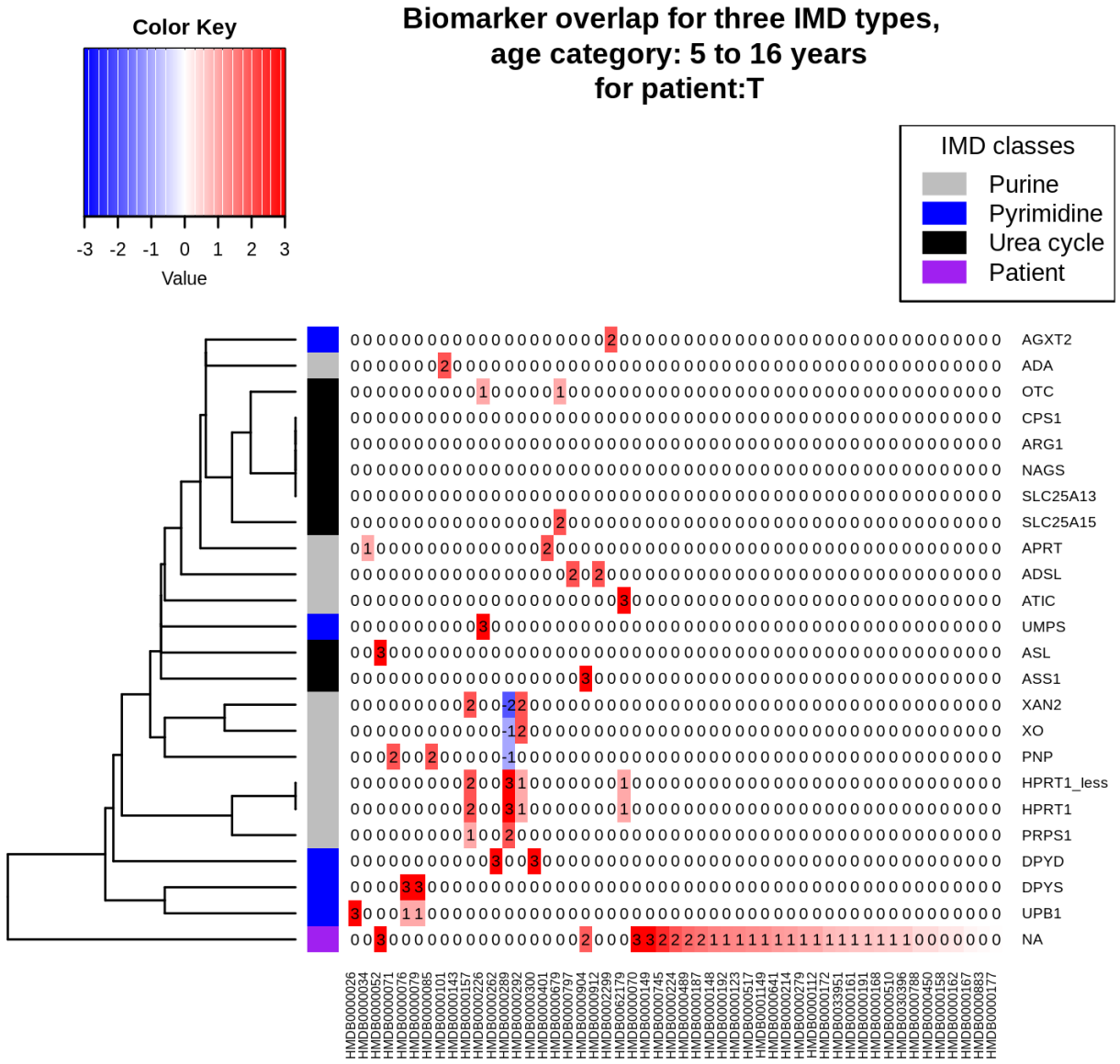
Final conclusion: Indicative for OTC, requires more testing (plasma measurement). Phosphoethanolamine seems to be a potential biomarker for this and previous OTC cases; however unclear molecular origin.

Selected Patient ID is: T , age is between: 5 to 16 years old

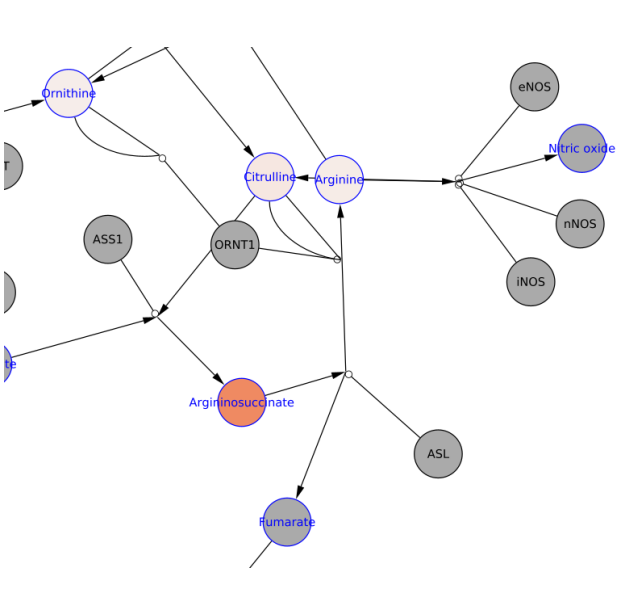
Relevant Biomarkers (out of 32):

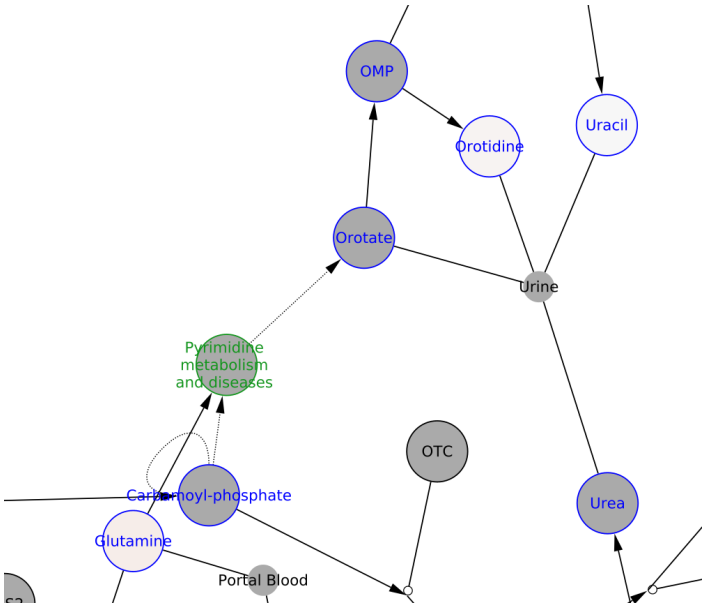
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
argininobarnsteenzuur	Argininosuccinate	CHEBI:57472	12.55
pipecolinezuur	Pipecolic acid	CHEBI:30913	3.72
ethanolamine	Monoethanolamine	CHEBI:16000	3.09
3-methyl-histidine	3-Methyl-histidine	CHEBI:27596	2.73
homocarnosine	Homocarnosine	CHEBI:85981	2.50
fosfoethanolamine	Phosphoethanolamine	CHEBI:17553	2.00
citrulline	Citrulline	CHEBI:57743	1.89
N-aspartyl-glucosamine	N-Aspartylglucosamine	CHEBI:17261	1.74
serine	Serine	CHEBI:17115	1.61
glutaminezuur	Glutamic acid	CHEBI:18237	1.46

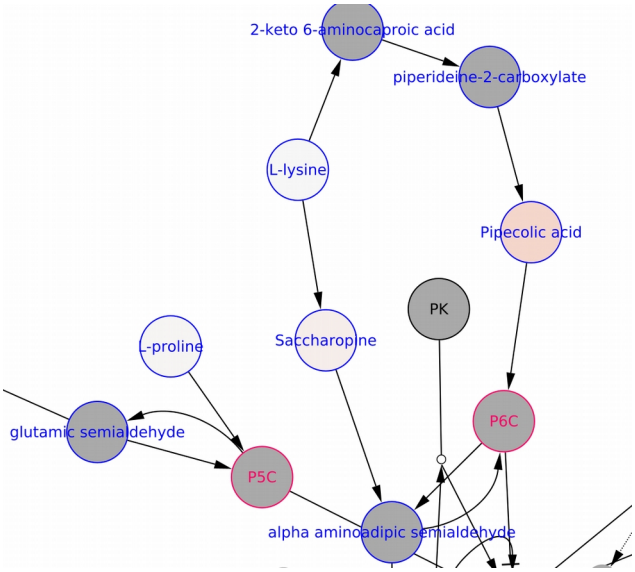
Dutch.name <chr>	Database.name <chr>	ID <chr>	log.Change <dbl>
cystine	Cystine	CHEBI:16283	1.42
glycine	Glycine	CHEBI:15428	1.40
arginine	Arginine	CHEBI:32682	1.32
delta-aminolevulinezuur	Aminolevulinic acid	CHEBI:17549	1.28
glutamine	Glutamine	CHEBI:58359	1.16
ornithine	Ornithine	CHEBI:46911	1.12
saccharopine	Saccharopine	CHEBI:16927	1.00
gamma-aminoboterzuur	GABA	CHEBI:16865	1.00
isoleucine	Isoleucine	CHEBI:17191	0.81
methionine	Methionine	CHEBI:16811	0.74

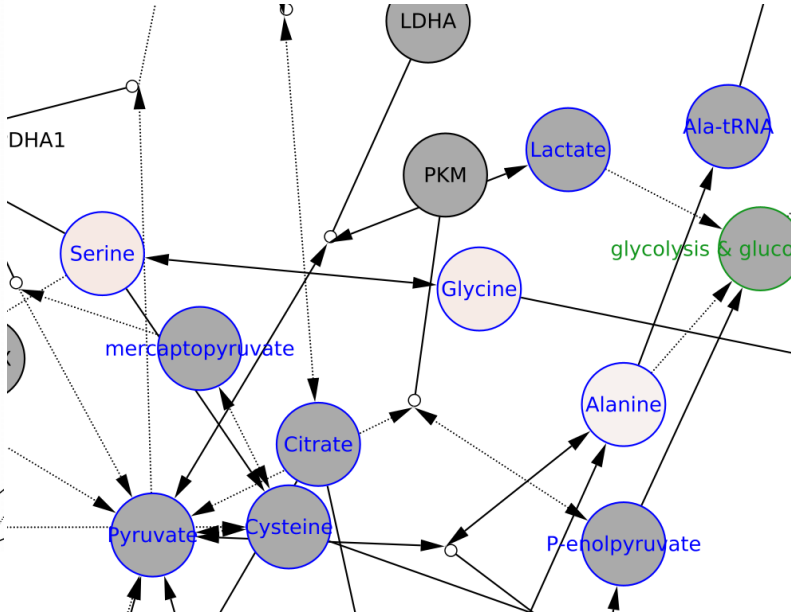


	pathway	pathwayTitle	CHEBIsInPWs	includedCHEBIs
	<chr>	<chr>	<int>	<chr>
1	WP3925	Amino acid metabolism	12	15428 15971 16414 16828 16857 16977 17053 17115 17191 17196 17203 17895
2	WP4595	Urea cycle and associated pathways	8	16977 17203 25722 32682 46911 57472 57743 58359
3	WP4583	Biomarkers for urea cycle disorders	7	16857 17895 32682 46911 57472 57743 58359
4	WP4571	Urea cycle and related diseases	5	32682 46911 57472 57743 58359
5	WP4225	Pyrimidine metabolism and related diseases	4	25722 46911 57743 58359









Interpretation 1: ASL
Interpretation 2: ASL