Supplementary Contents

Supplementary Methods

Supplementary Method S1. Inclusion/Exclusion Criteria

ADRENAL trial recruitment has been previously described by Venkatesh et al. (2018). Participants included adult septic shock patients from 69 intensive care units (ICUs) across Australia, the United Kingdom, New Zealand, Saudi Arabia, and Denmark (n = 3658) that were recruited from 2013 to 2017 into a double-blind, randomised, controlled trial (RCT) designed to examine the efficacy of hydrocortisone on septic shock. The inclusion criteria for eligible participants were:

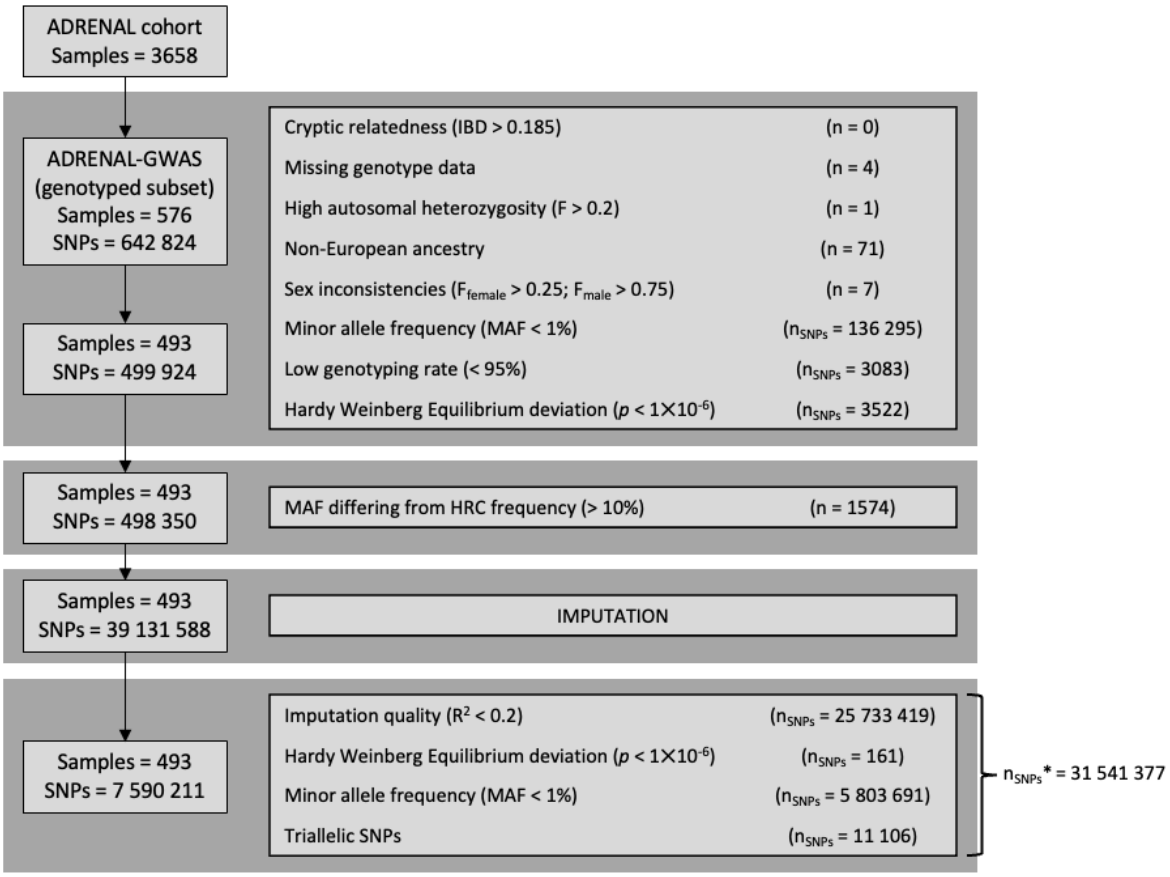
1. Aged 18 years or older
2. Documented site of infection or strong suspicion of infection
3. Two of the four clinical signs of inflammation:
    I. Core temperature > 38℃ or < 36℃
    II. Heart rate > 90 beats per minute
    III. Respiratory rate > 20 breaths per minute, or $PaCO_2$ < 32 mmHg, or mechanical ventilation
    IV. White cell count > 12×10^9/L or < 4×10^9/L or > 10% immature neutrophils
4. Treatment with mechanical ventilation at the time of randomization (including both via the presence of an endotracheal tube or a non-invasive ventilation with bi-level of continuous positive airway pressure)
5. Treatment with continuous vasopressors or inotropes to maintain a systolic blood pressure > 90 mmHg, or a mean arterial blood pressure (MAP) > 60 mmHg, or a MAP target set by the treating clinician for maintaining perfusion
6. Administration of vasopressors or inotropes for ≥ 4 hours and present at time of randomization

The exclusion criteria for eligible participants were:

1. Met all inclusion criteria more than 24 hours ago
2. Clinician expects to prescribe systemic corticosteroids for an indication other than septic shock (not including nebulised or inhaled corticosteroid)
3. Patients treated with etomidate
4. Patients receiving treatment with Amphotericin B for systemic fungal infections at time of randomization
5. Patients with documented cerebral malaria at time of randomization
6. Patients with documented strongyloides infection at the time of randomization
7. Death is deemed inevitable or imminent during this admission and either the attending physician, patient, or surrogate legal decision maker are not committed to active treatment
8. Death from underlying disease is likely with 90 days
9. Patient has been previously enrolled in the ADRENAL trial

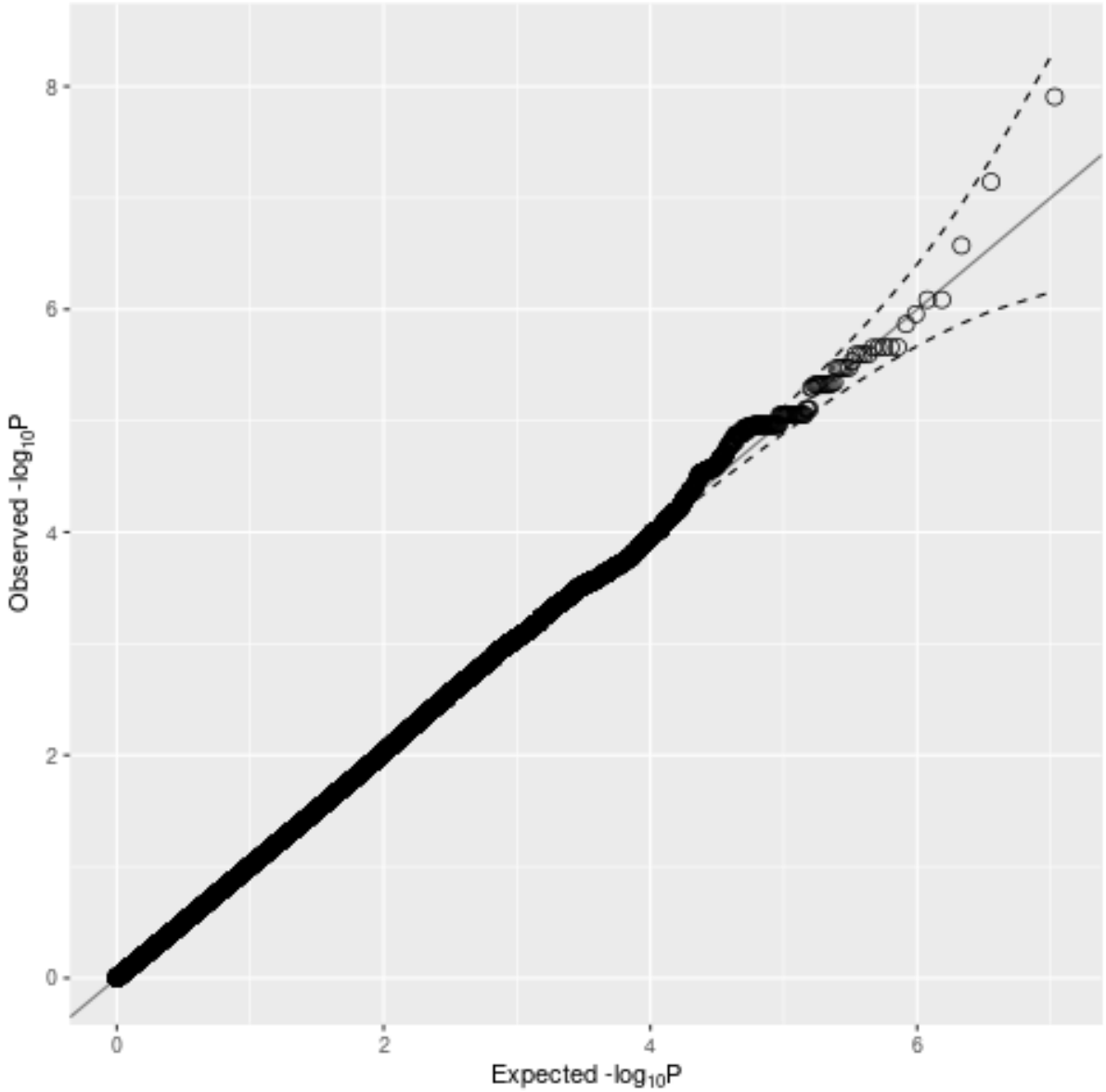
Patients were assigned to receive either 200 mg/day of intravenous hydrocortisone (n = 1832) or a placebo (n = 1826) for seven days or until death/discharge from the ICU.

Supplementary Method S2. GWAS QC

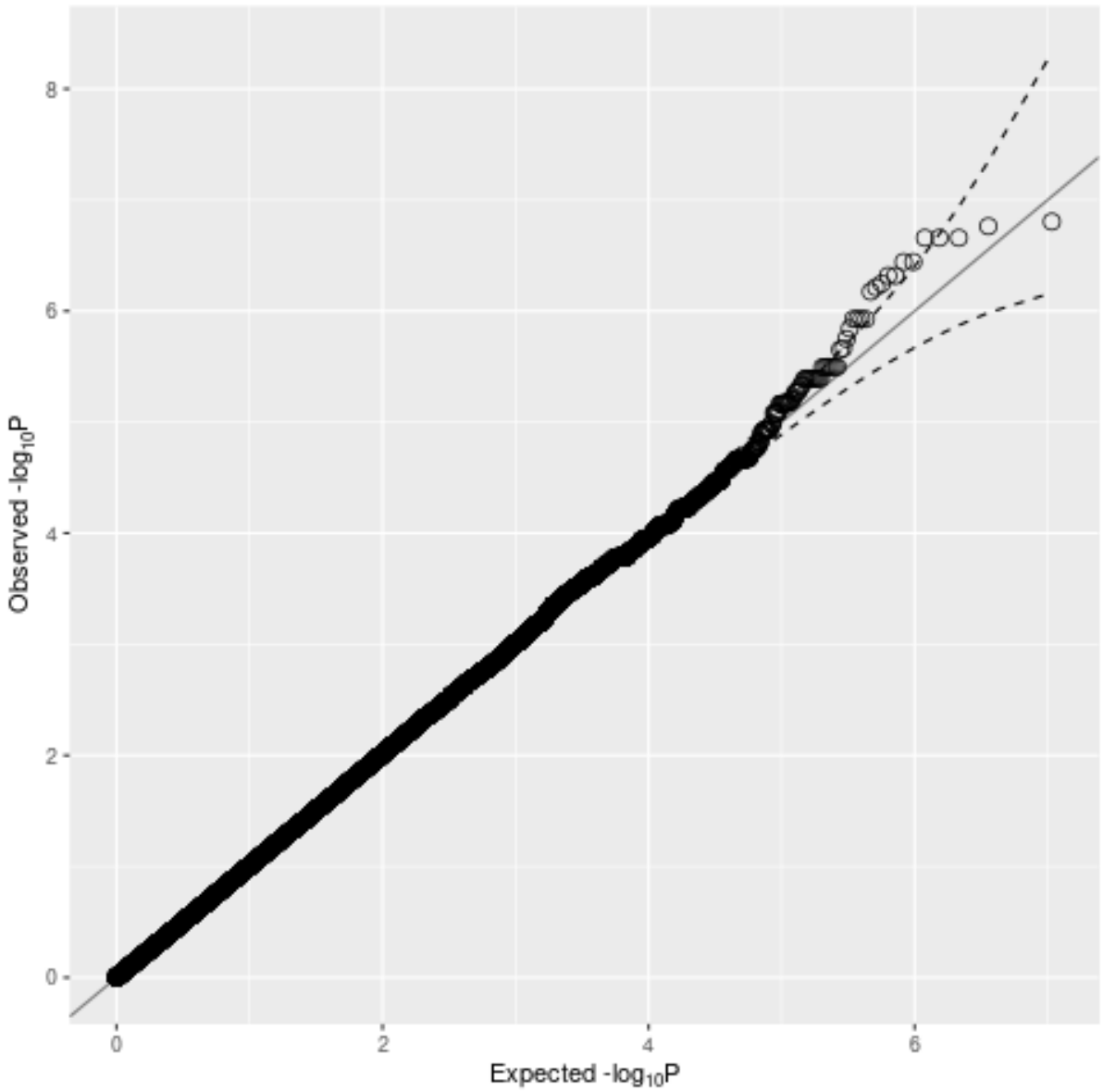


*QC step was performed as a single step with SNP exclusion overlap present across the different QC criteria

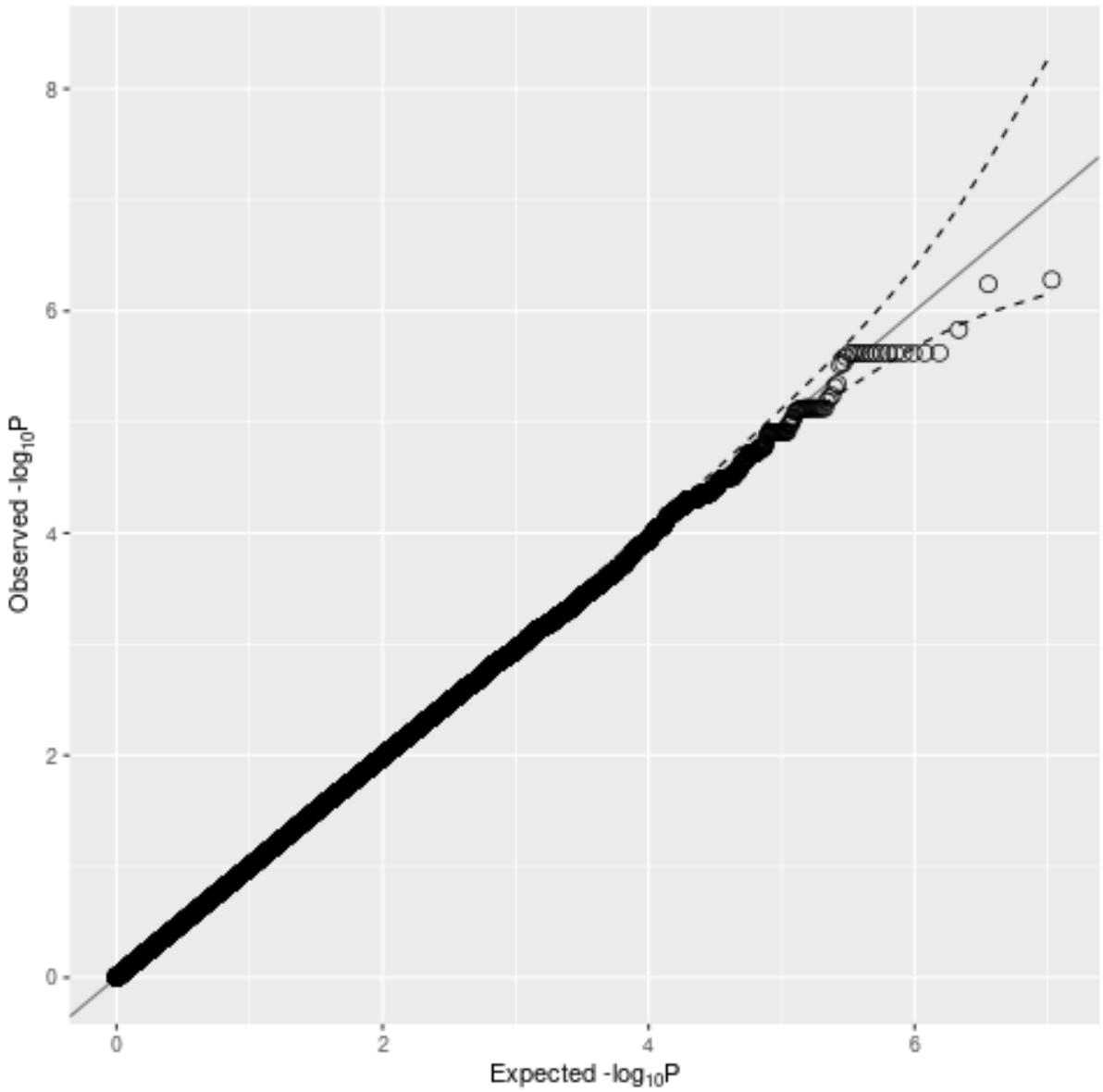
Supplementary Figures



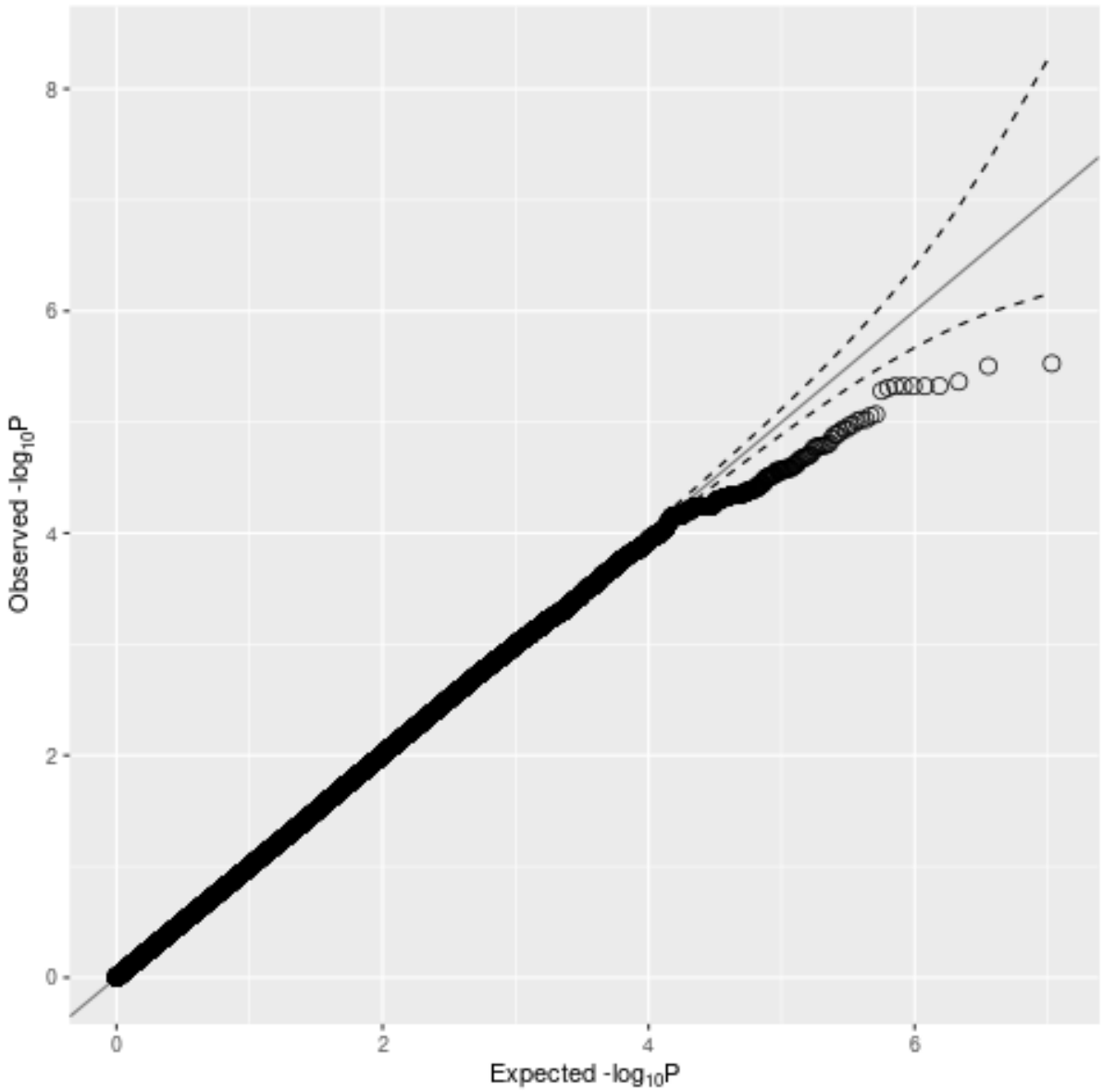
Supplementary Figure S1. Quantile-Quantile plot for the 3-hydroxybutyrate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



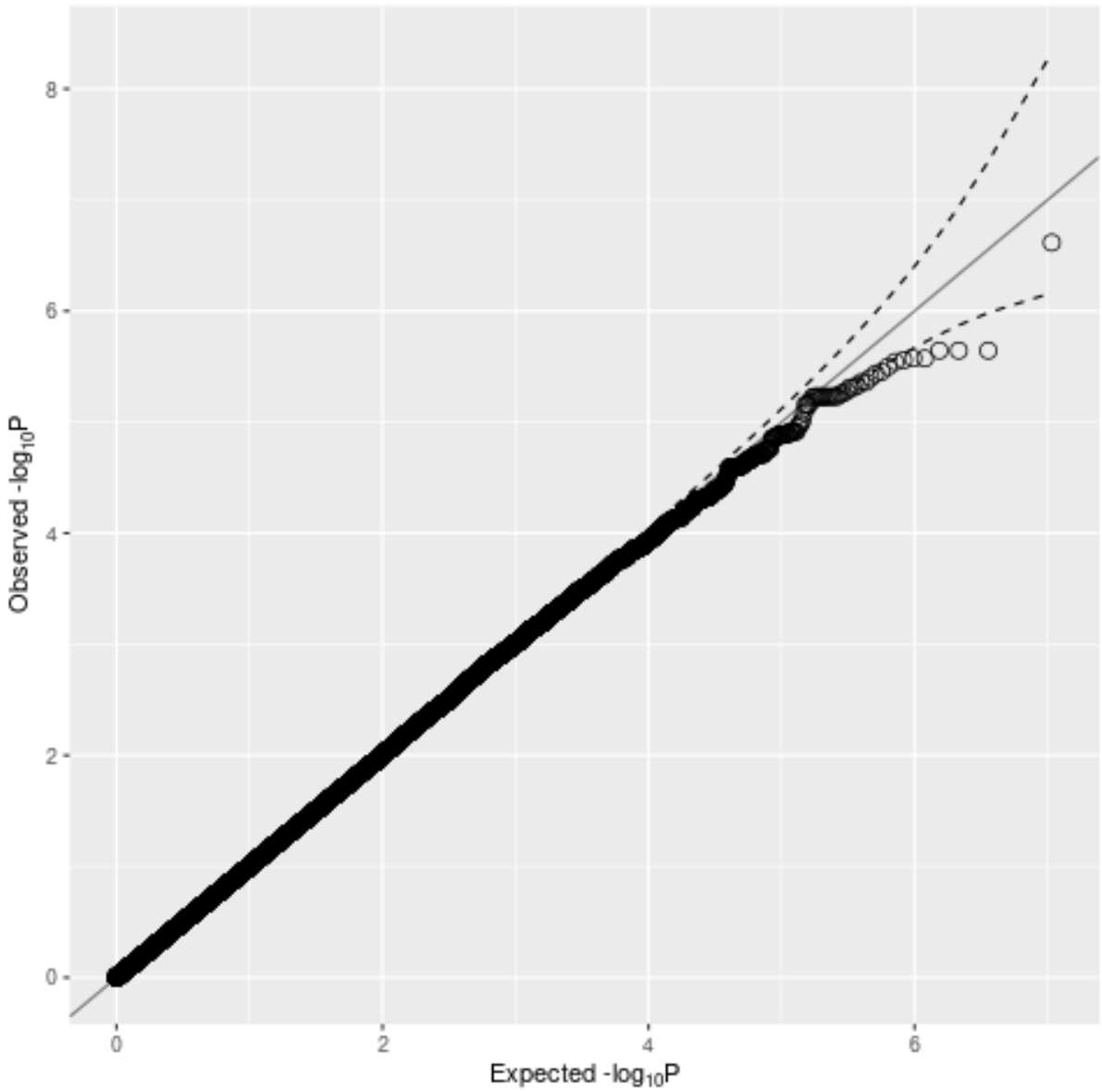
Supplementary Figure S2. Quantile-Quantile plot for the acetate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



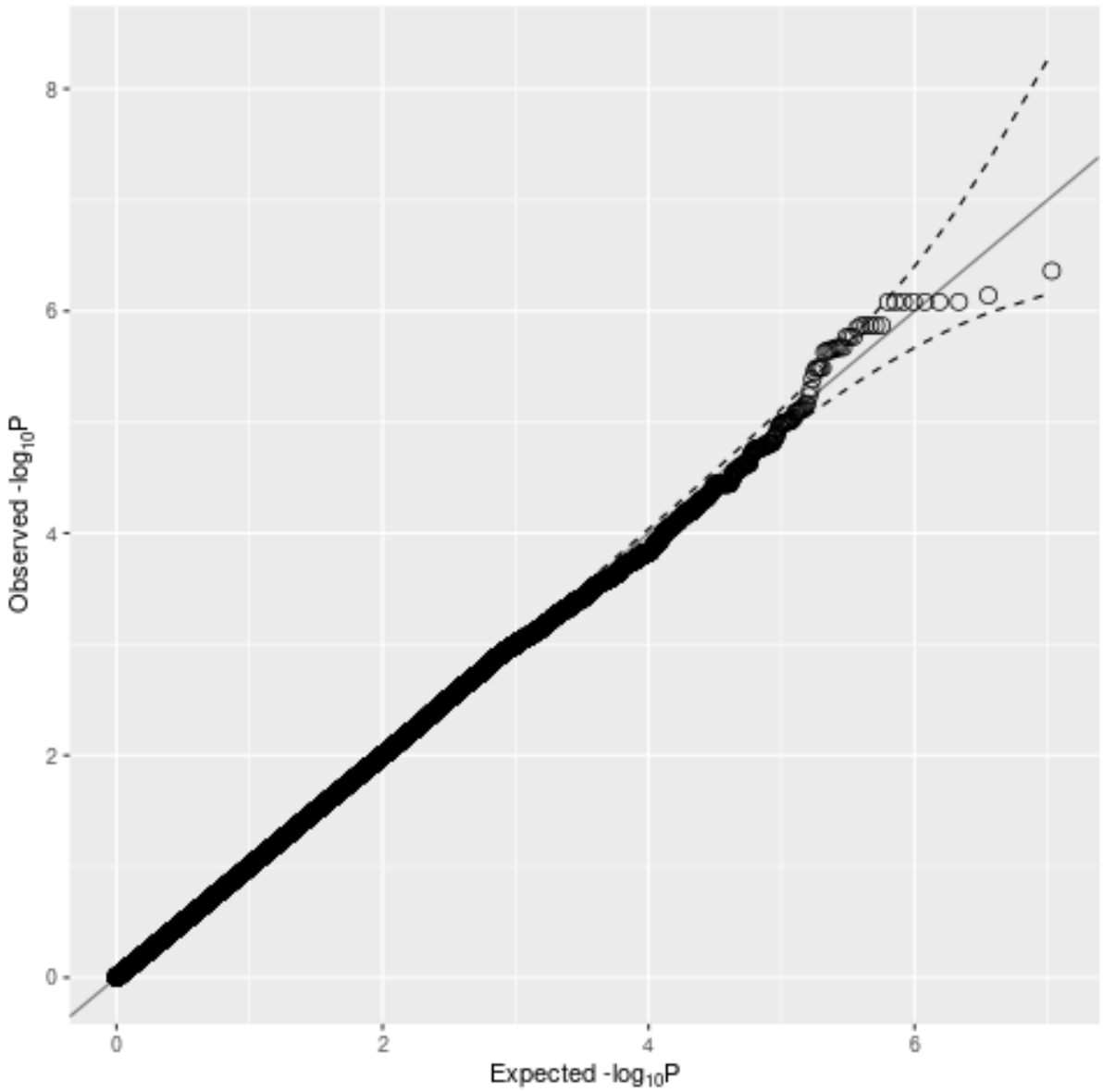
Supplementary Figure S3. Quantile-Quantile plot for the acetoacetate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



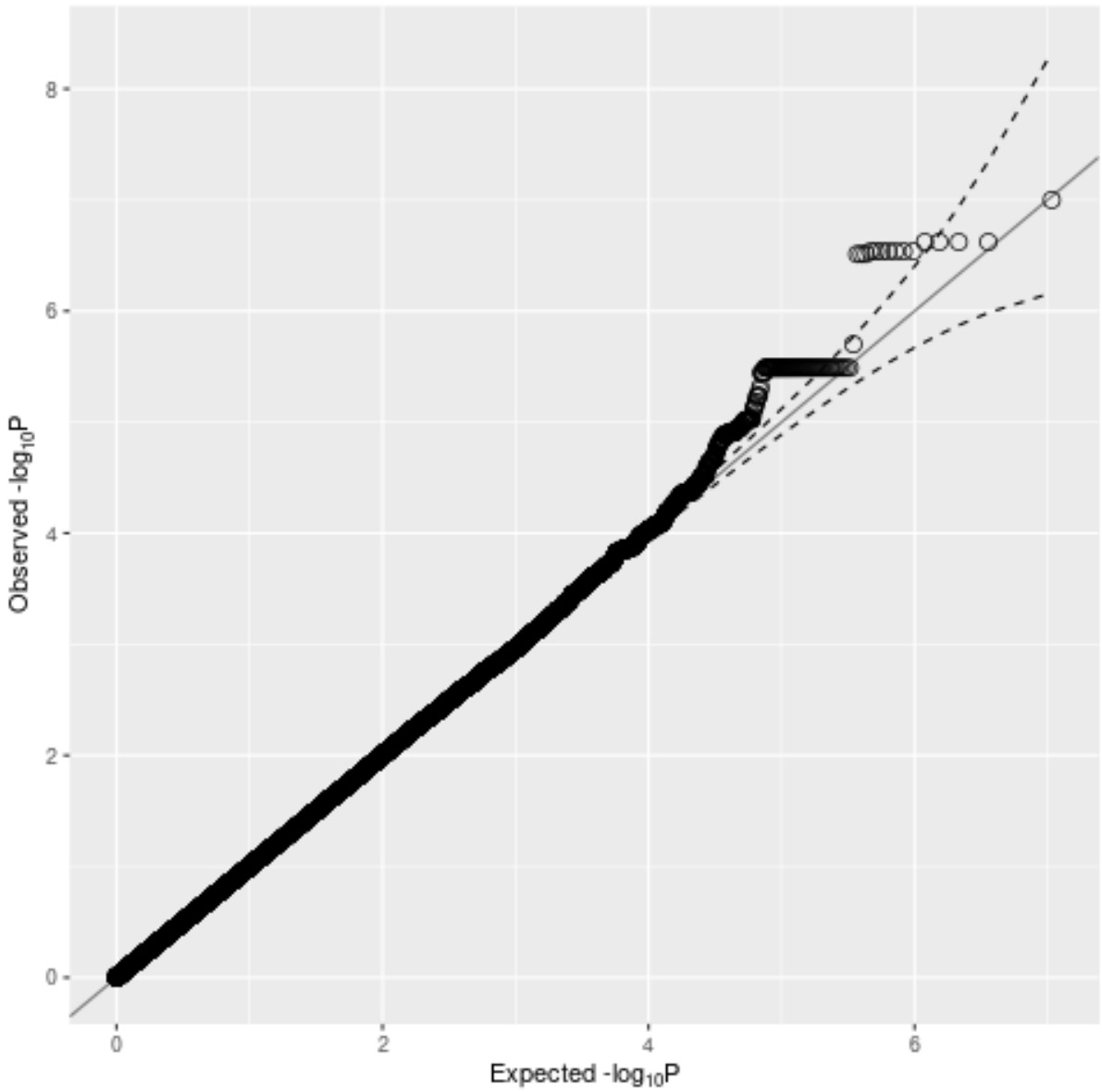
Supplementary Figure S4. Quantile-Quantile plot for the acetone GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



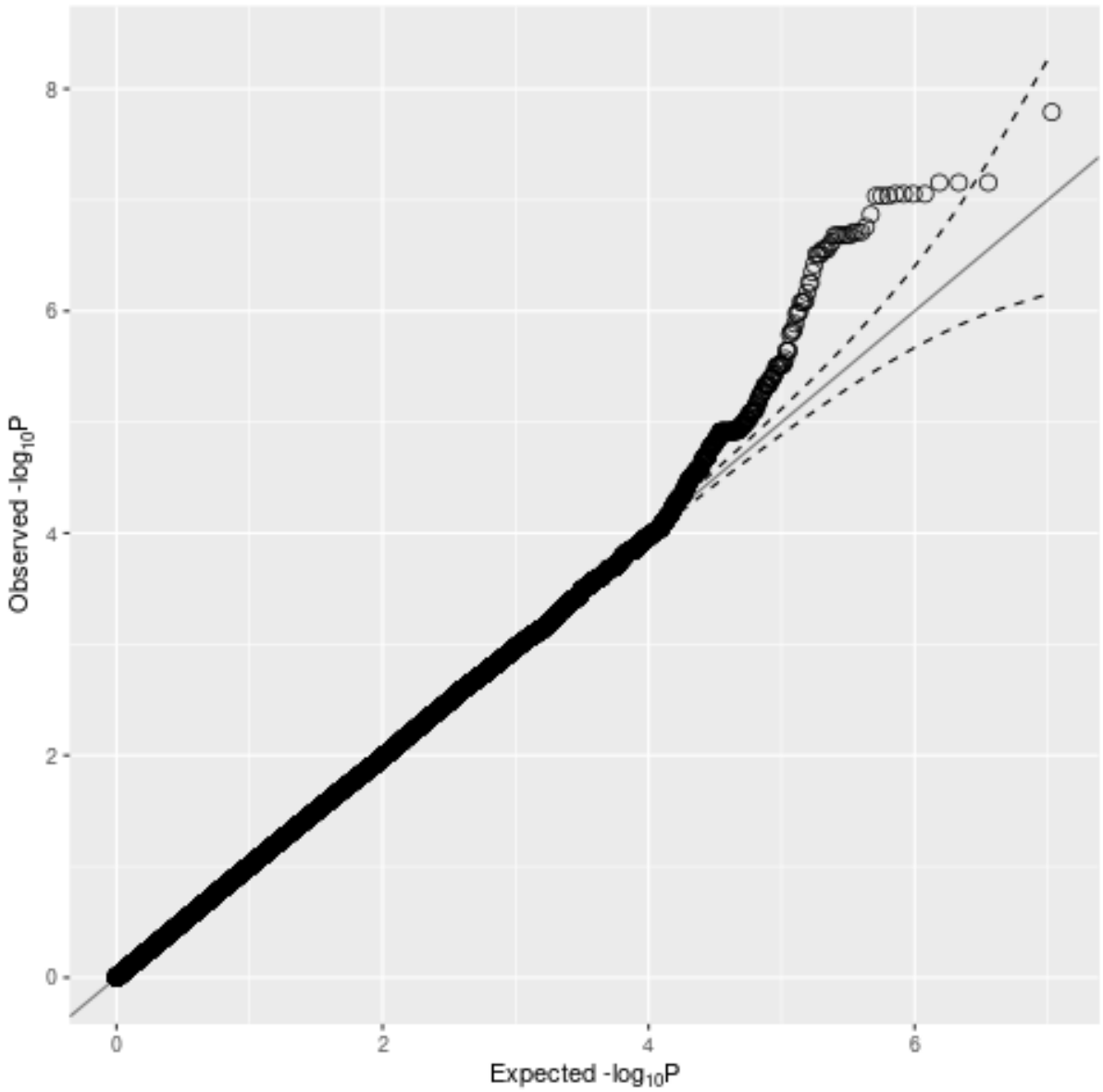
Supplementary Figure S5. Quantile-Quantile plot for the alanine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



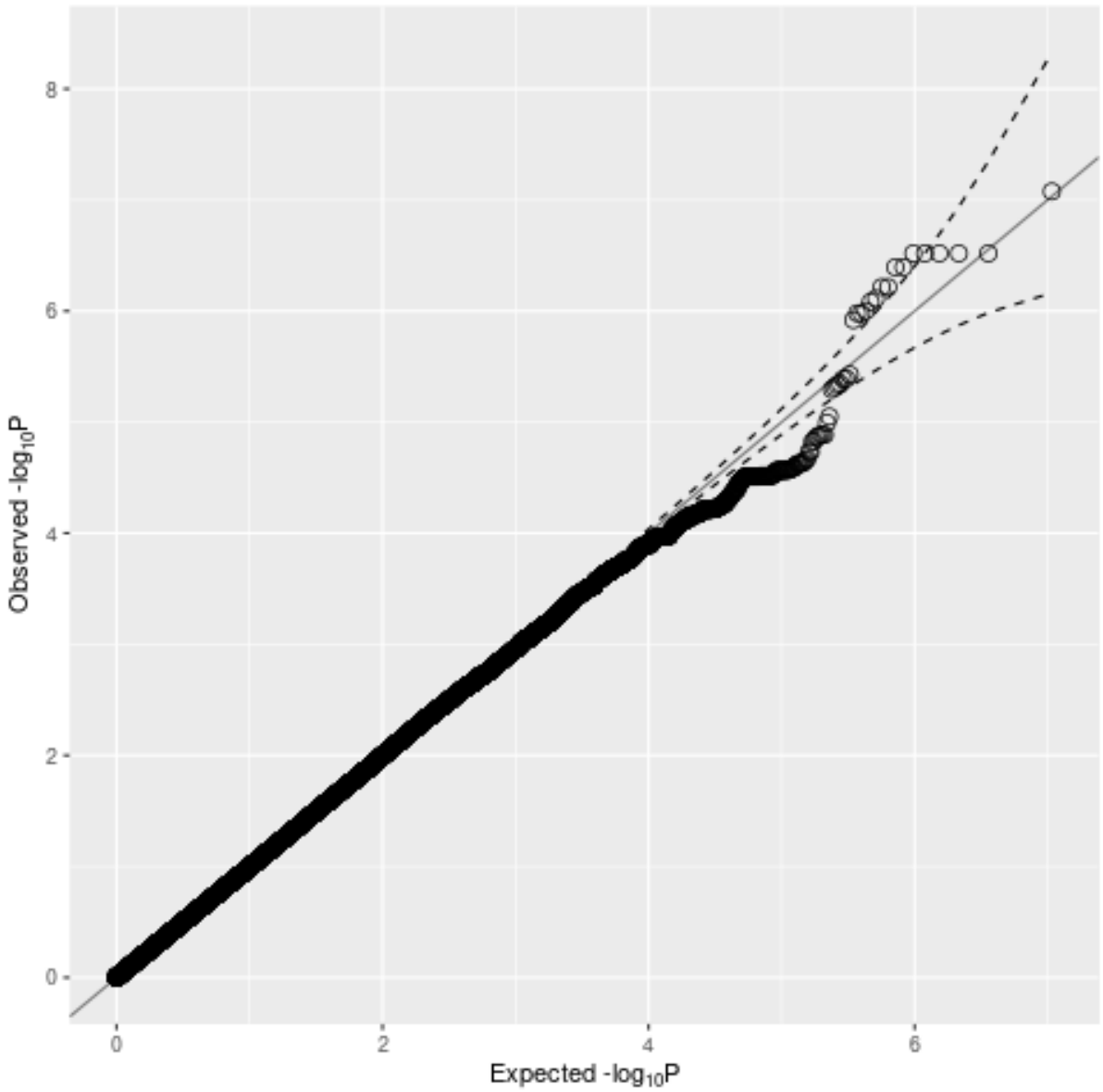
Supplementary Figure S6. Quantile-Quantile plot for the citrate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



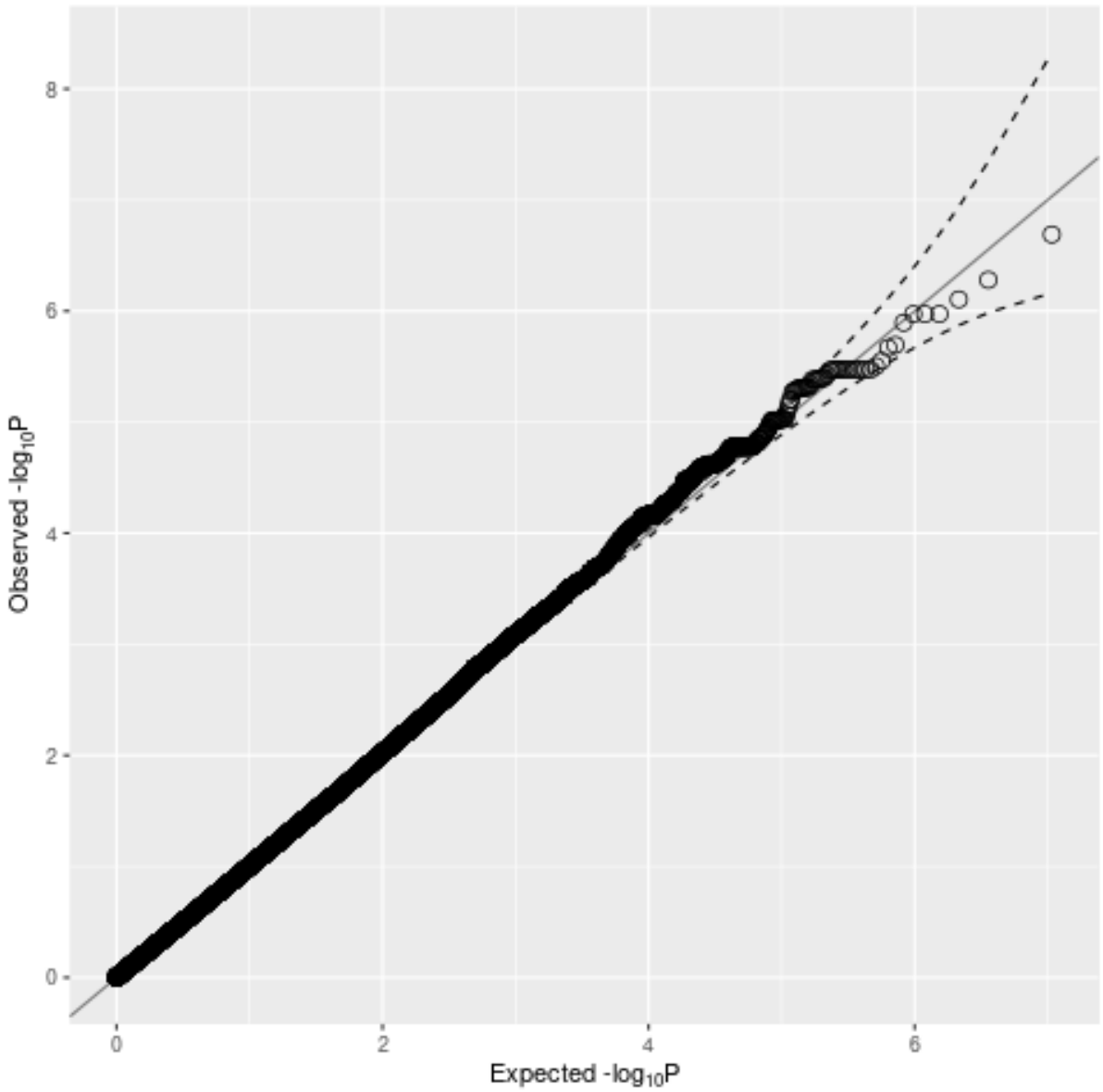
Supplementary Figure S7. Quantile-Quantile plot for the creatine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



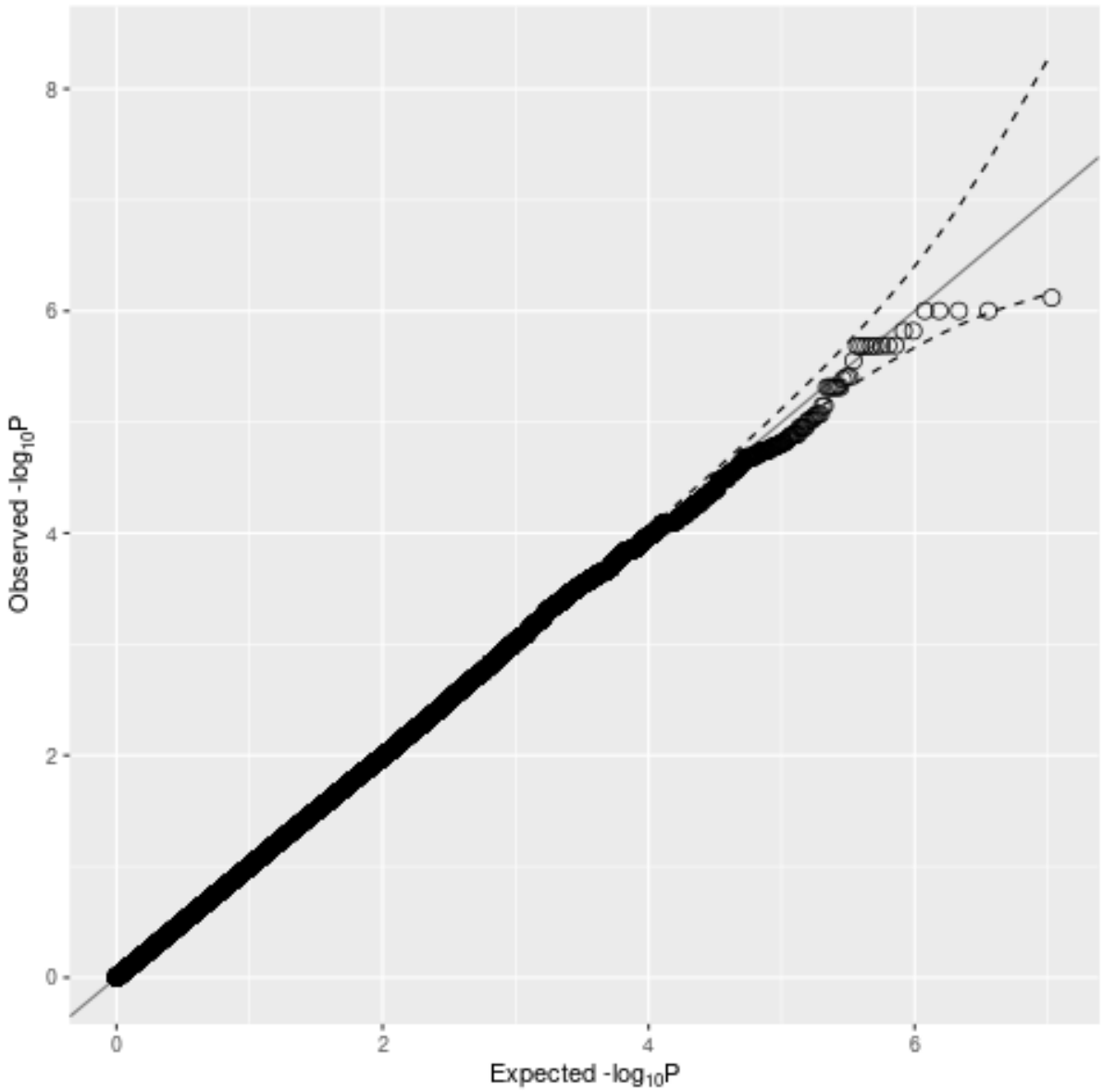
Supplementary Figure S8. Quantile-Quantile plot for the creatinine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



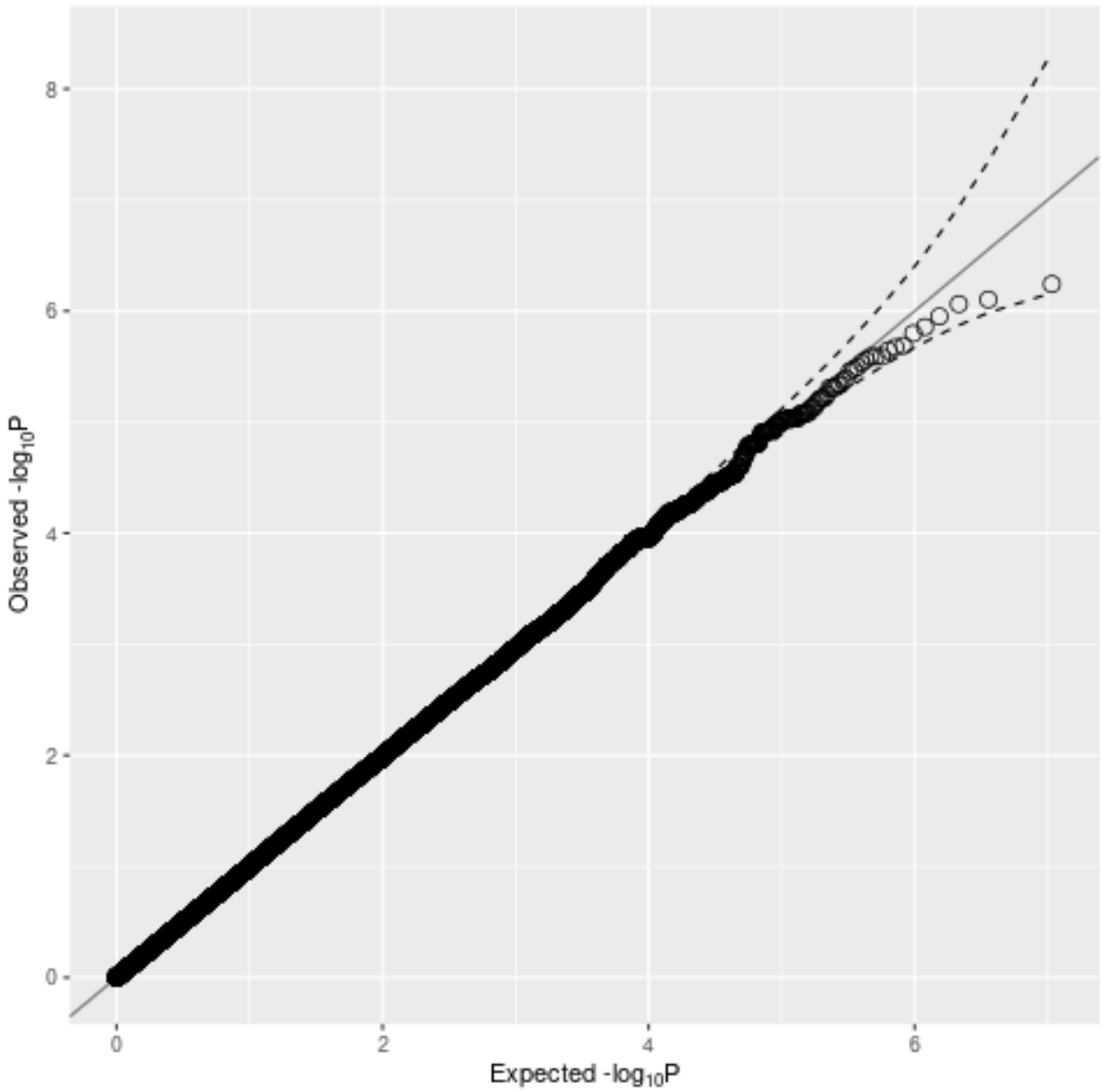
Supplementary Figure S9. Quantile-Quantile plot for the formate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



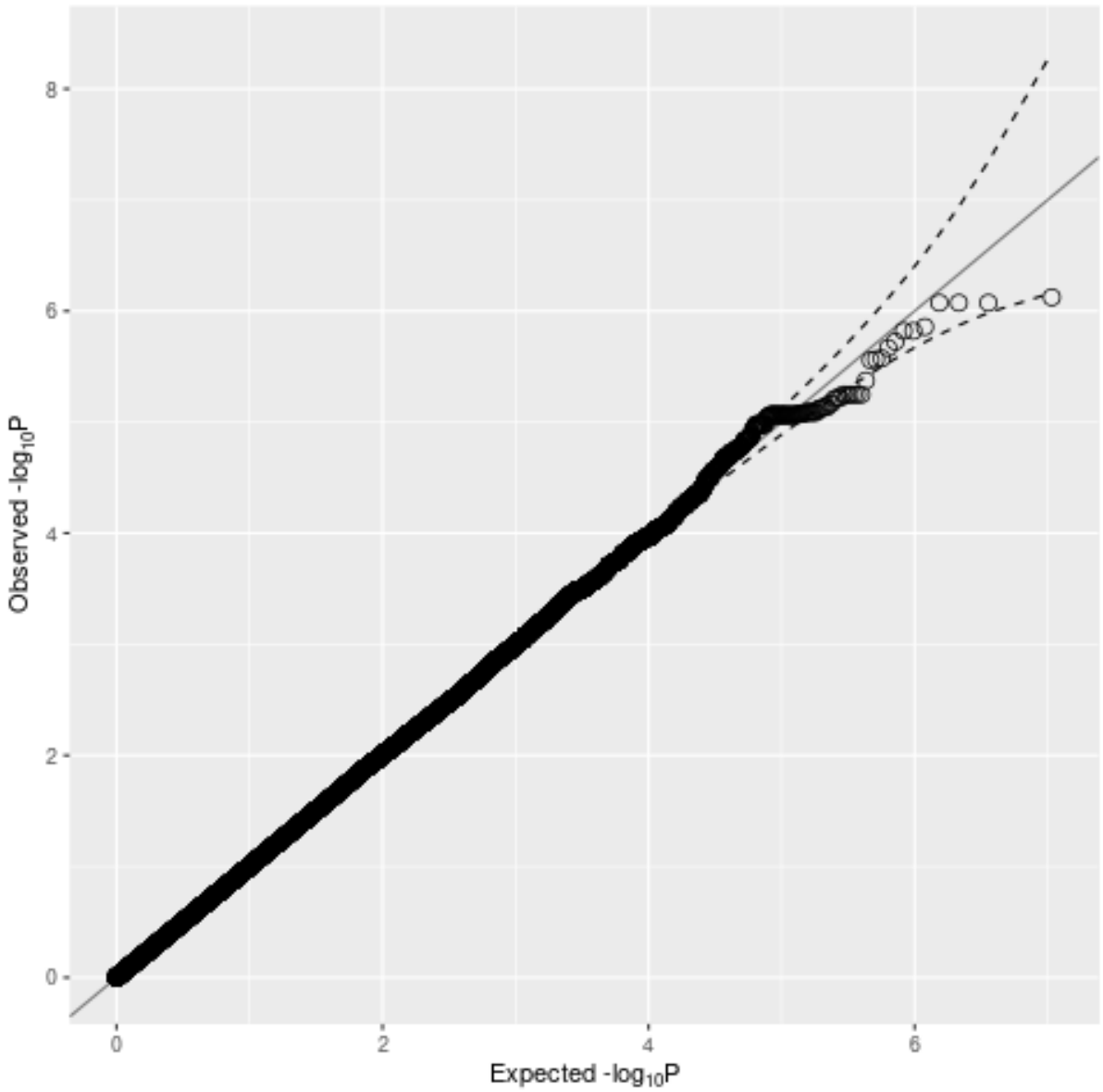
Supplementary Figure S10. Quantile-Quantile plot for the glucose GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



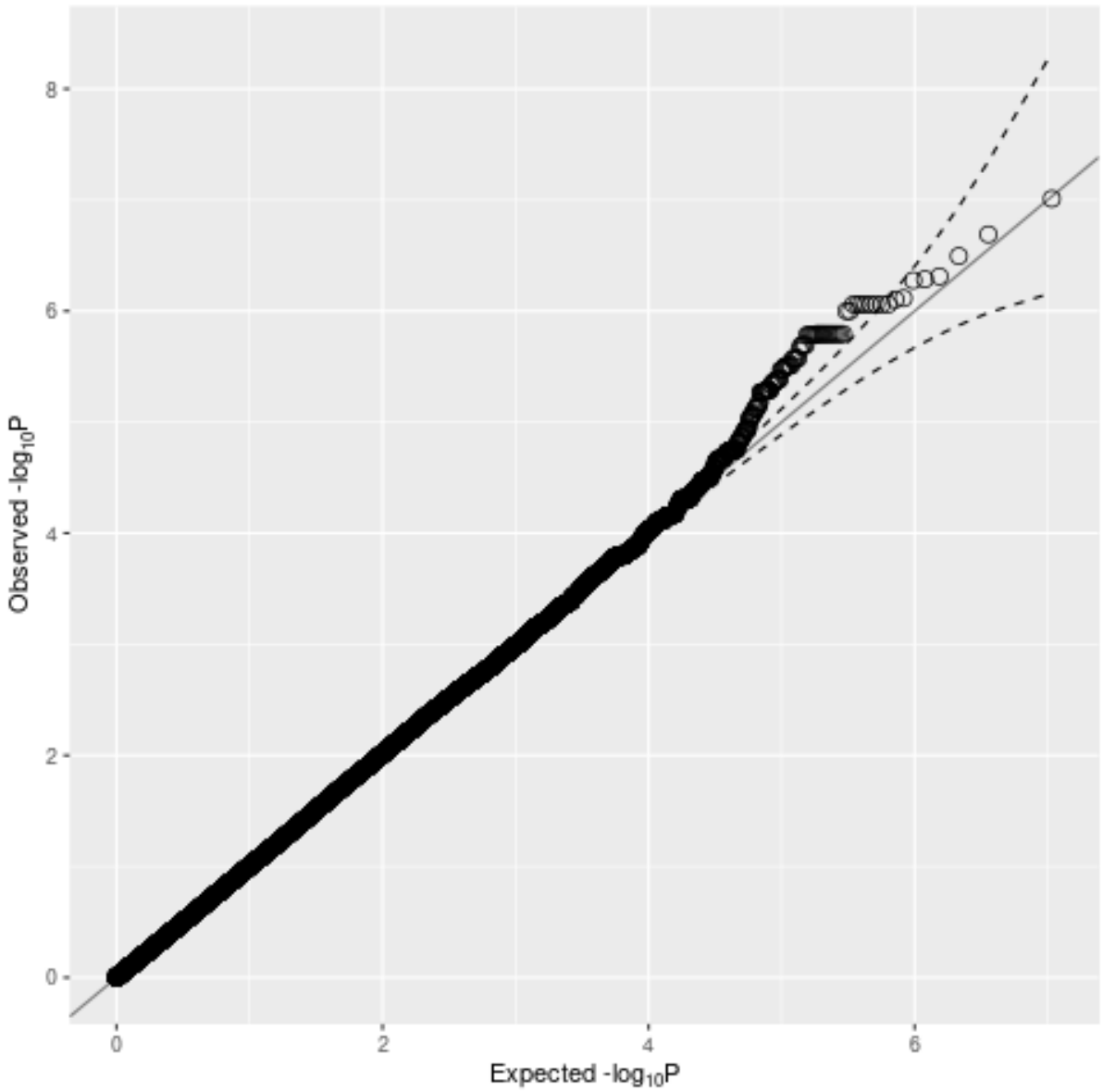
Supplementary Figure S11. Quantile-Quantile plot for the glycerol GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



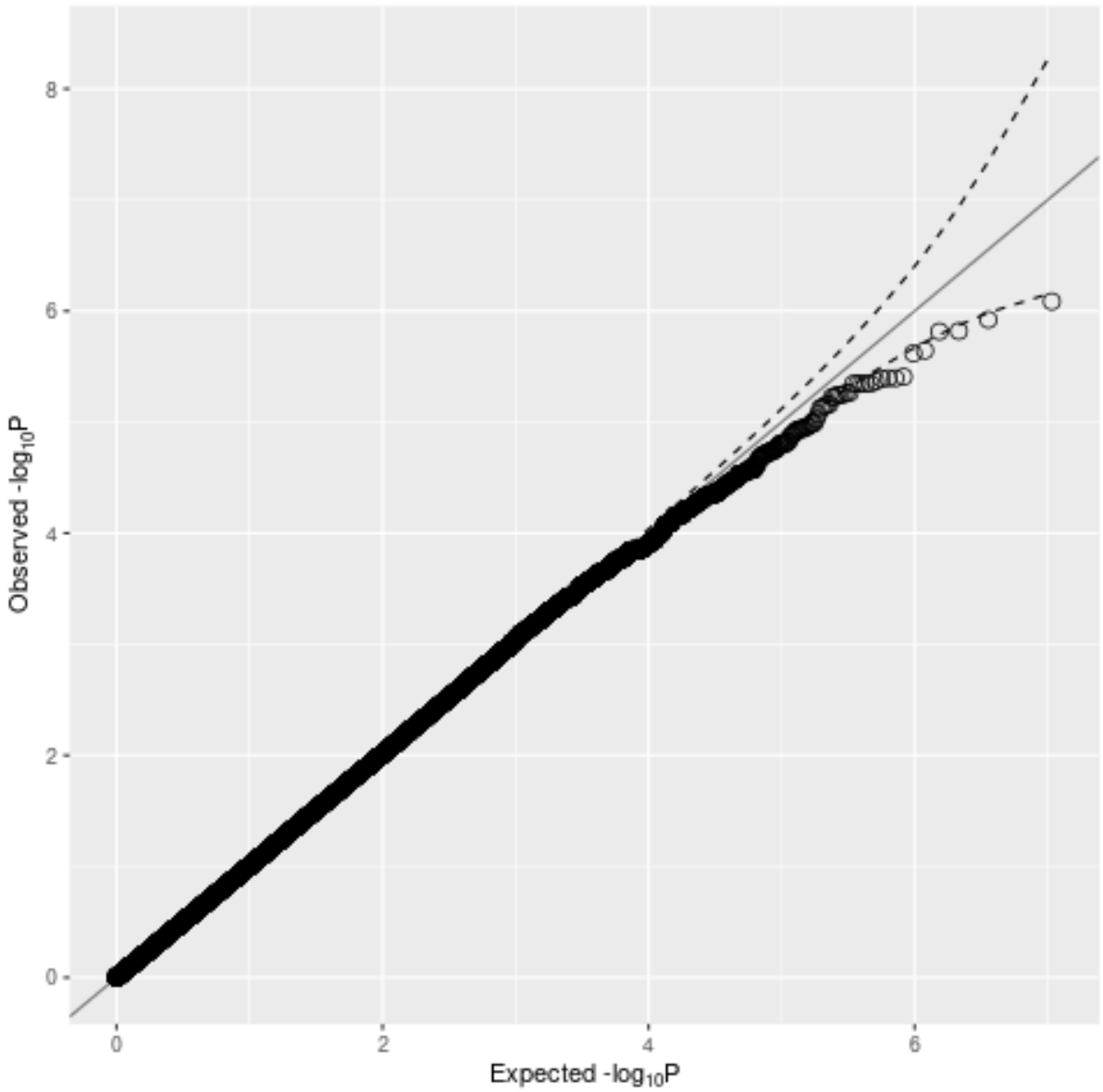
Supplementary Figure S12. Quantile-Quantile plot for the glycine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



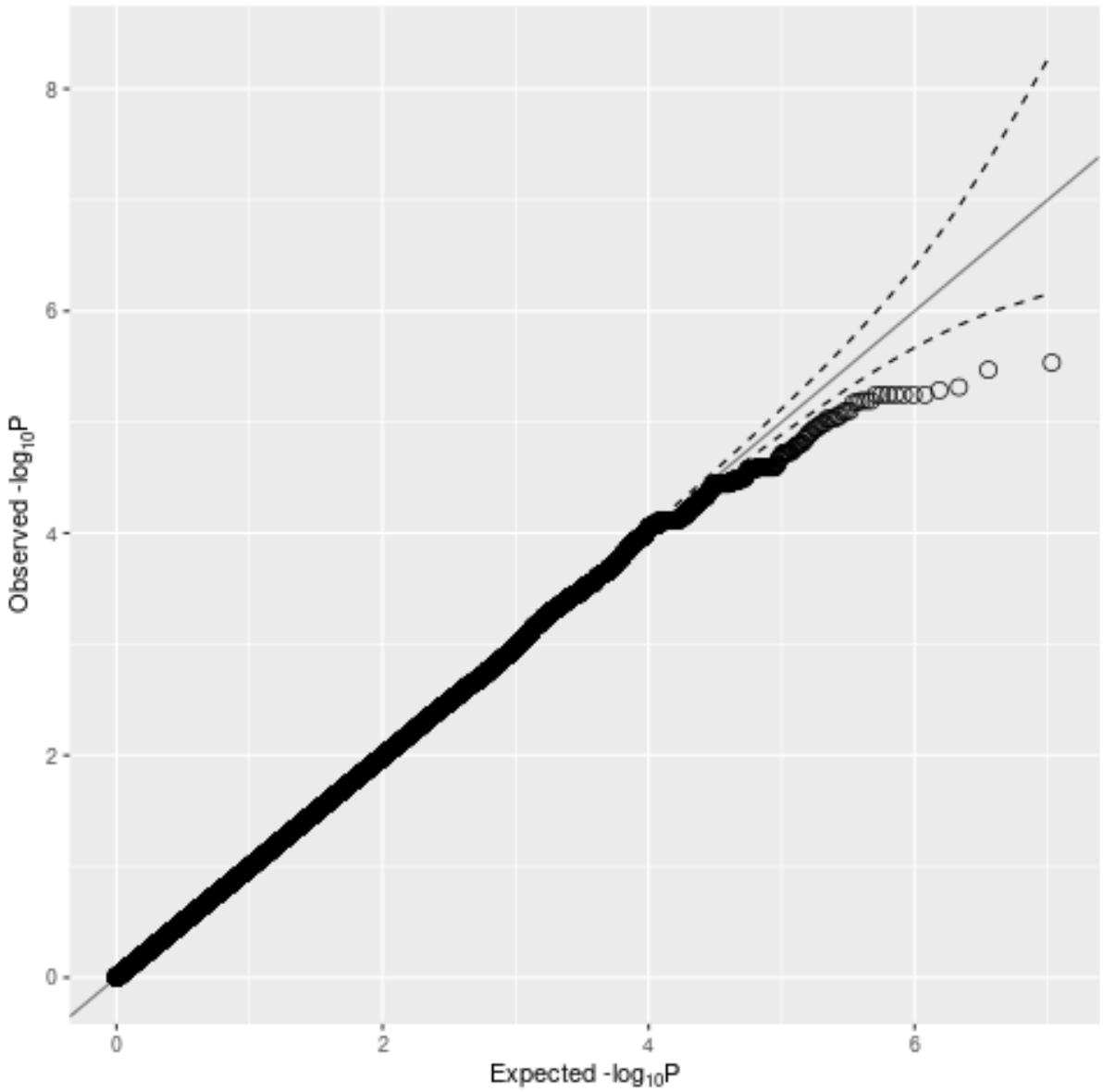
Supplementary Figure S13. Quantile-Quantile plot for the lactate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



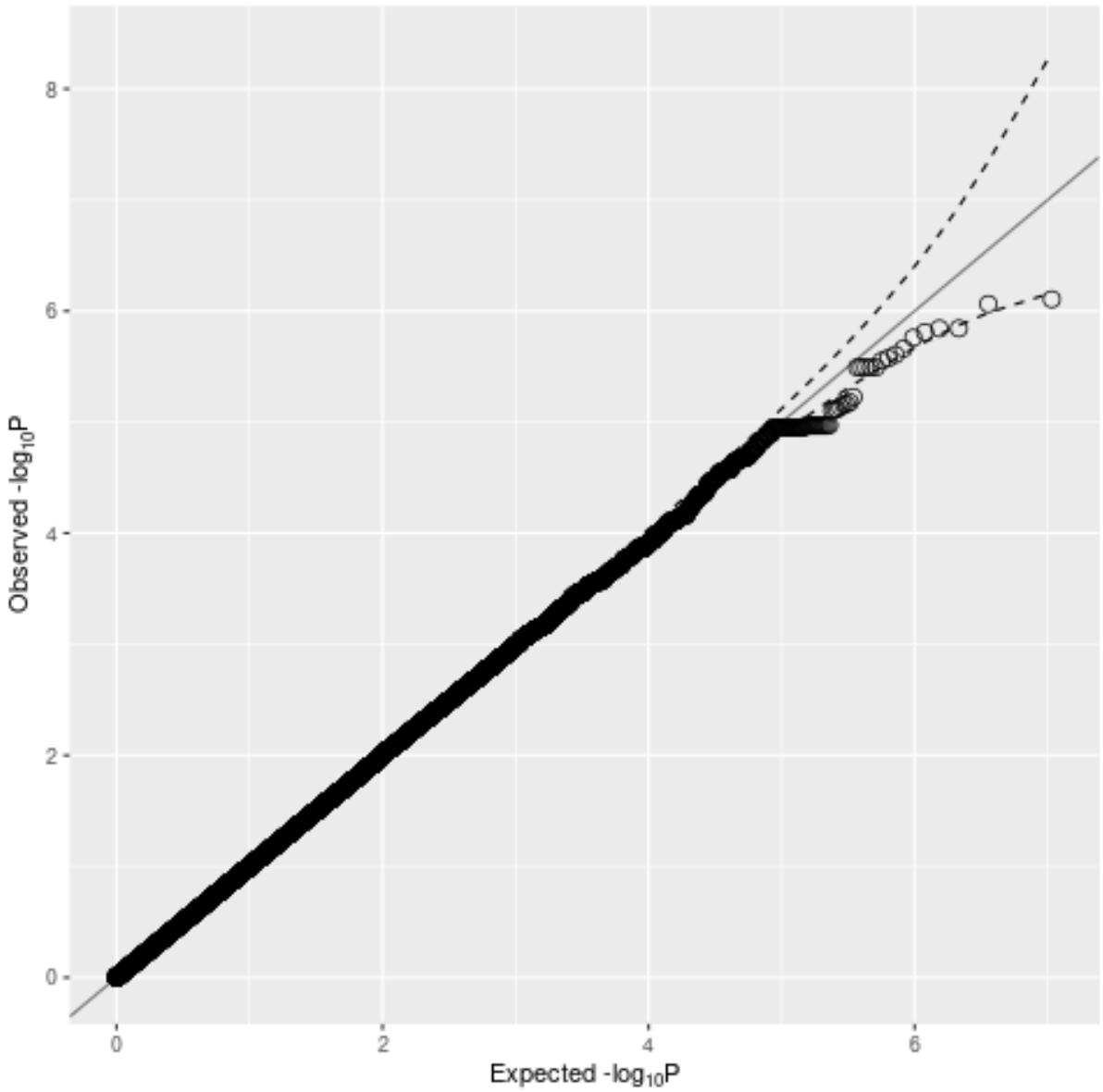
Supplementary Figure S14. Quantile-Quantile plot for the leucine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



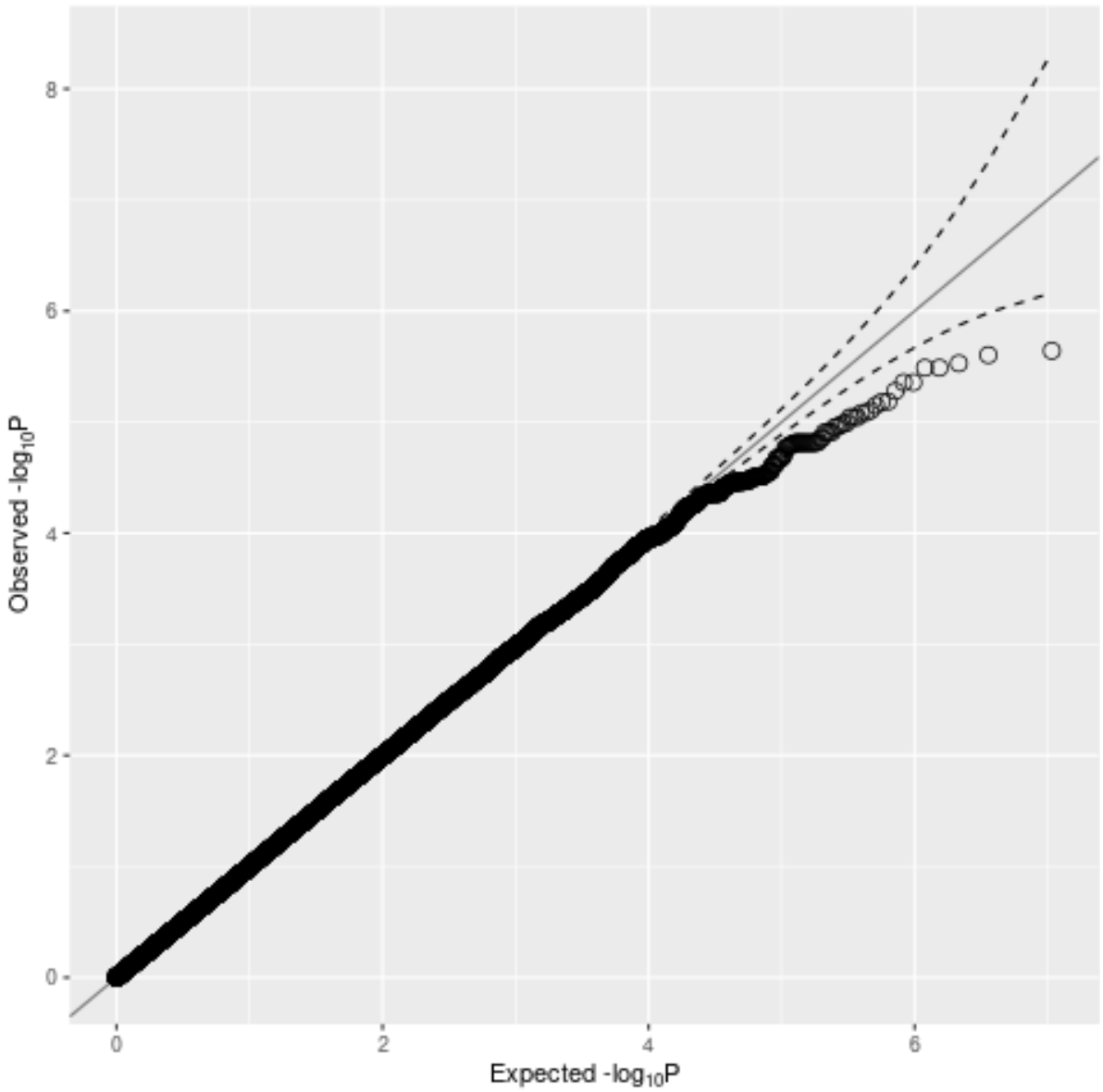
Supplementary Figure S15. Quantile-Quantile plot for the methanol GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



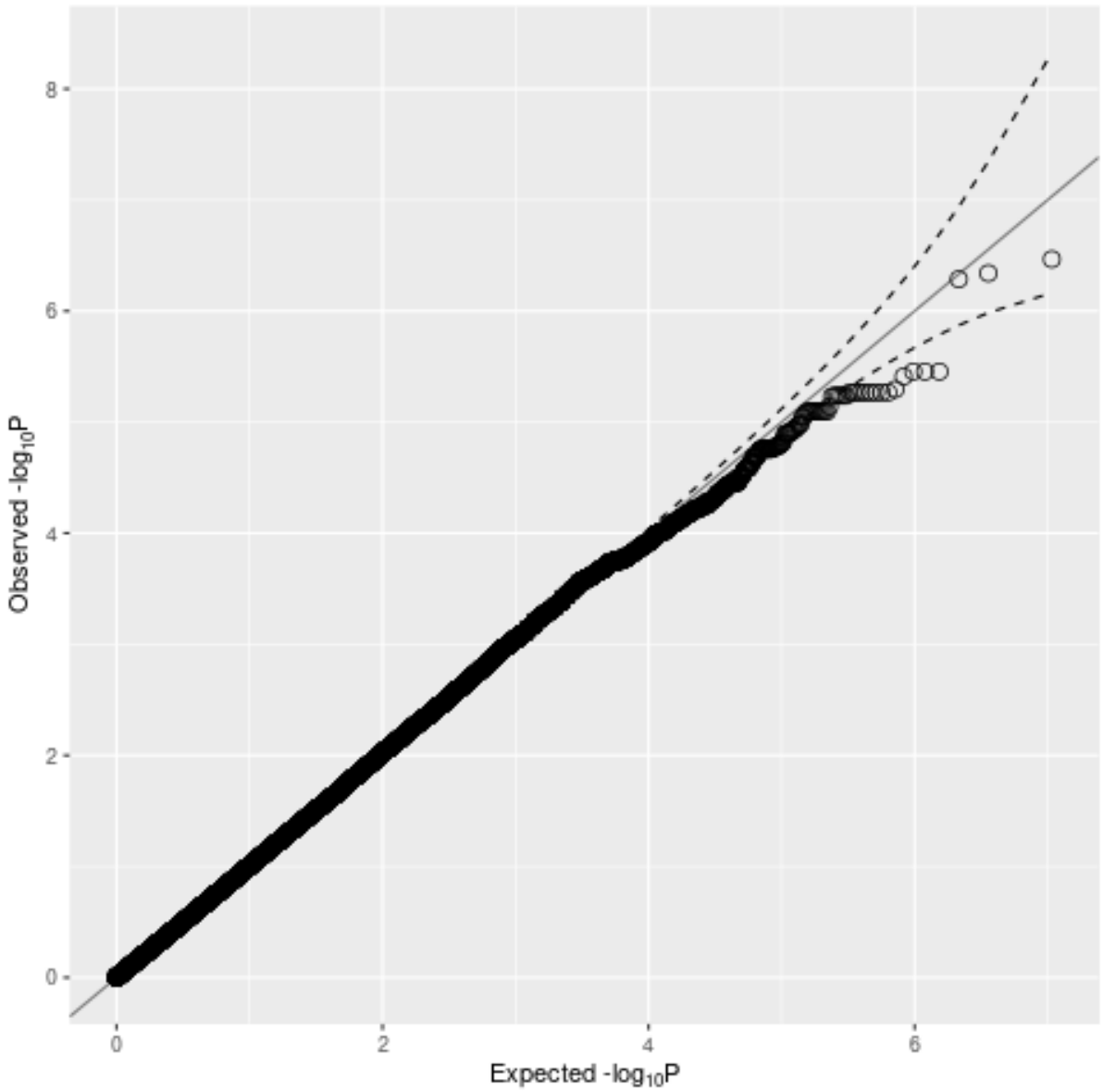
Supplementary Figure S16. Quantile-Quantile plot for the myo inositol GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



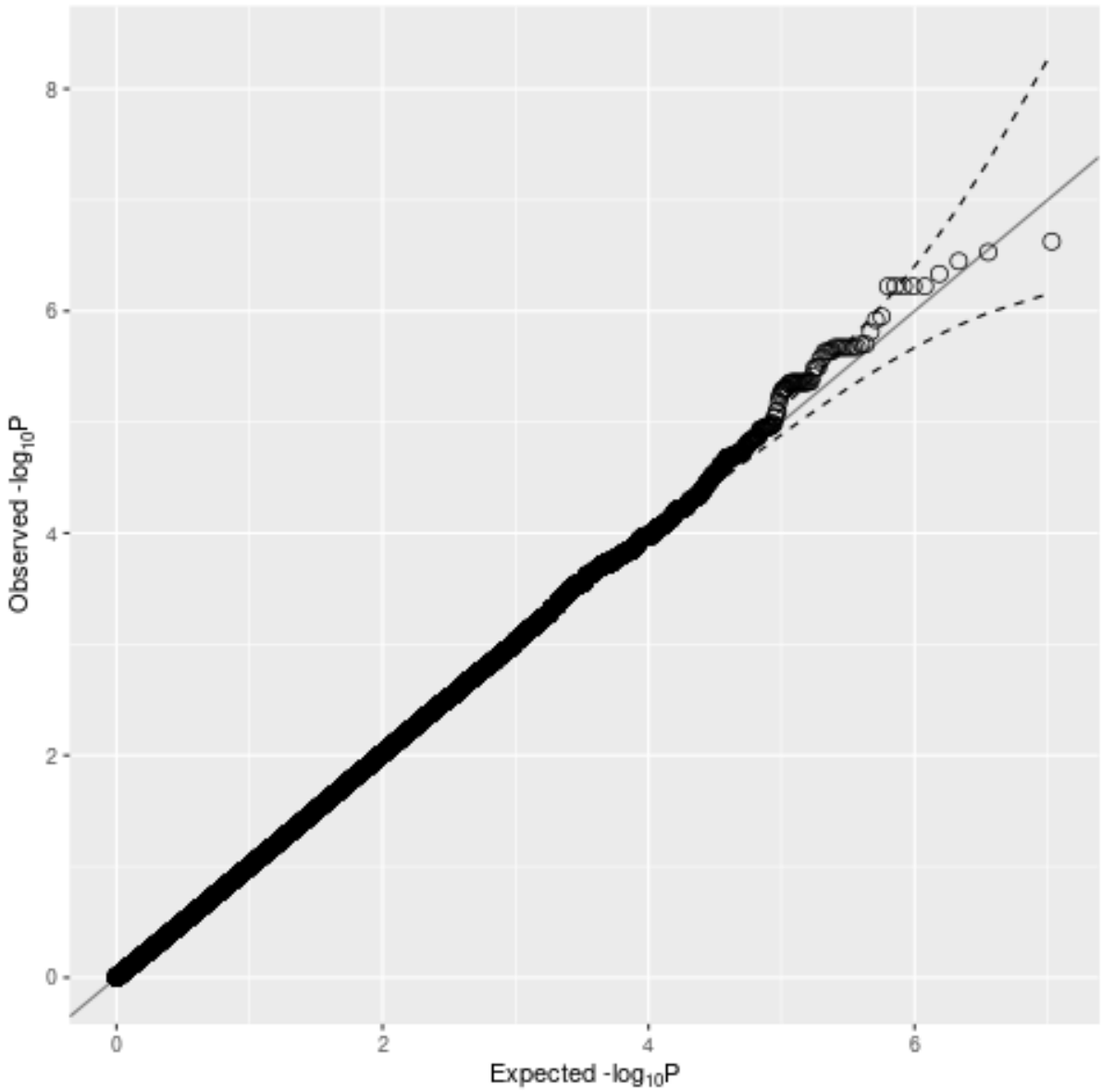
Supplementary Figure S17. Quantile-Quantile plot for the phenylalanine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



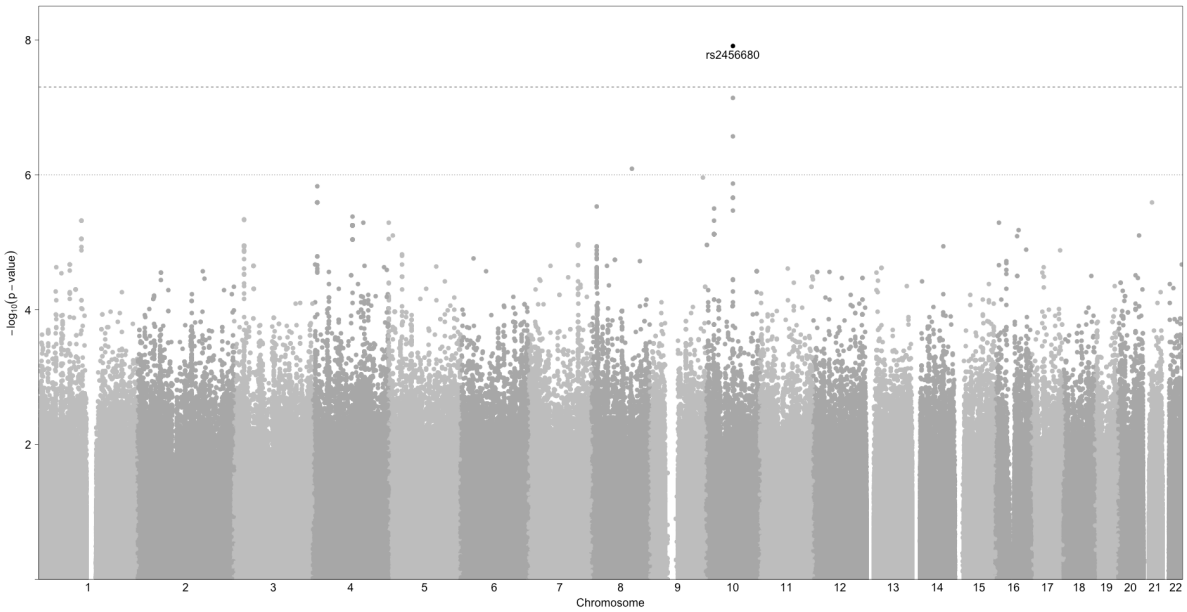
Supplementary Figure S18. Quantile-Quantile plot for the pyruvate GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



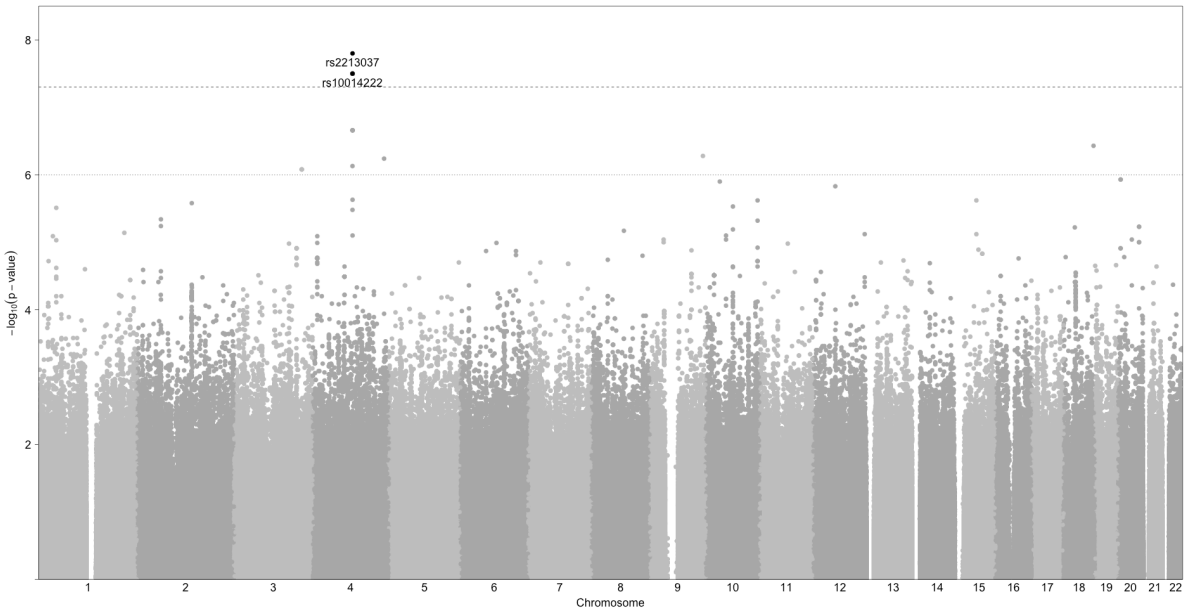
Supplementary Figure S19. Quantile-Quantile plot for the tyrosine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



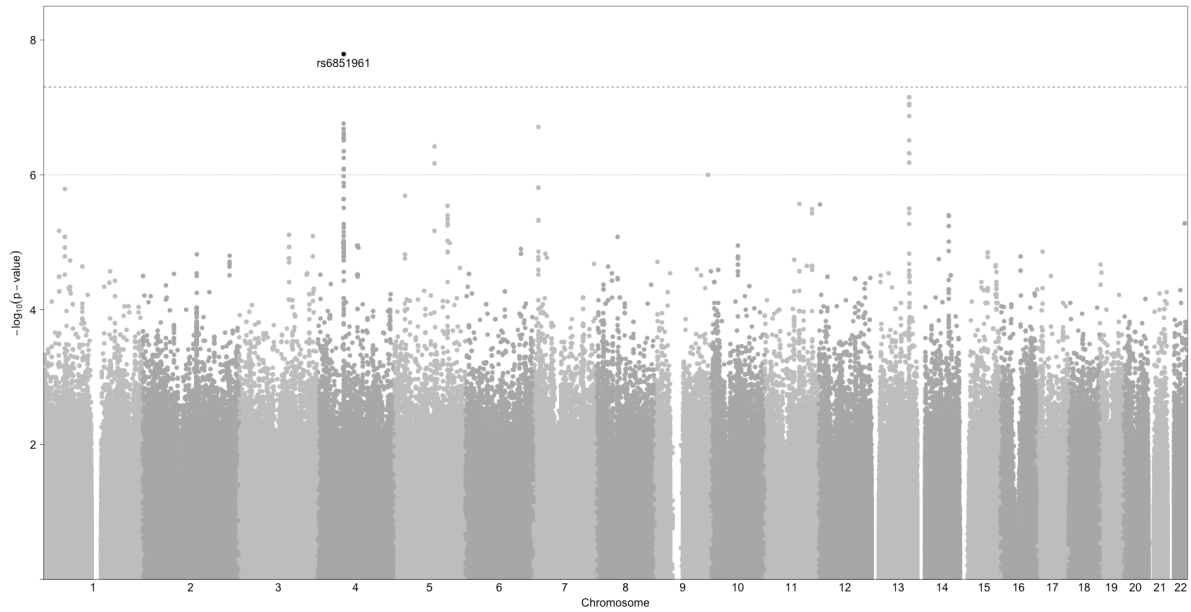
Supplementary Figure S20. Quantile-Quantile plot for the valine GWAS. Comparison of observed and expected -$\log_{10}$ *p*-values expected under the null distribution of no genetic association across the genome. The dotted line represents the pointwise 95% confidence interval expected under the null hypothesis of no association.



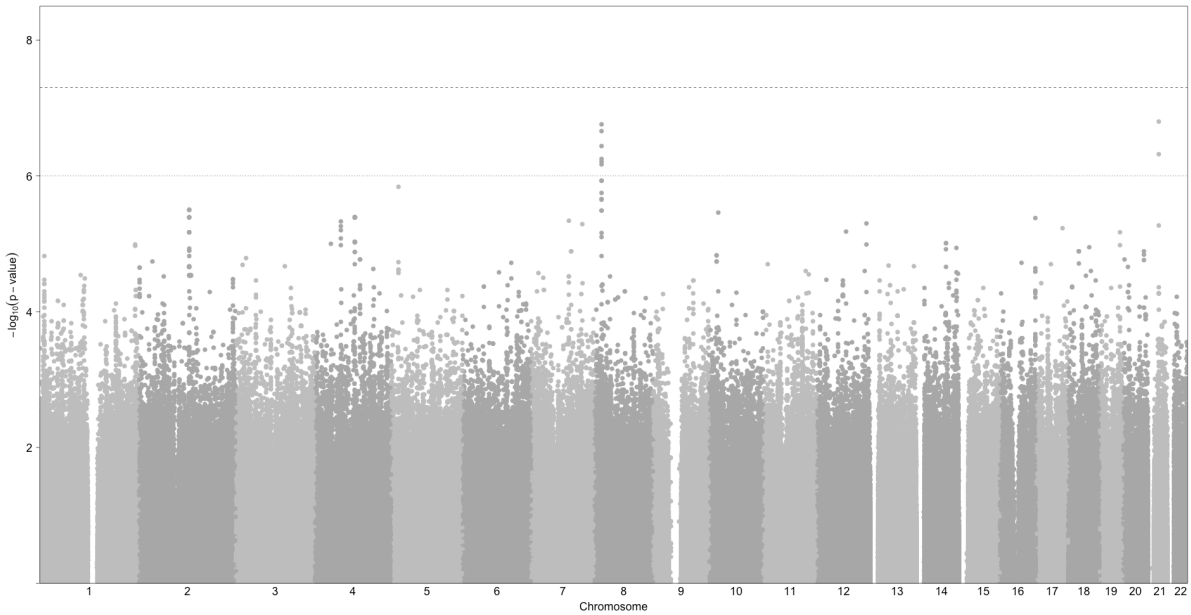
Supplementary Figure S21. Manhattan plot for the 3-hydroxybutyrate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



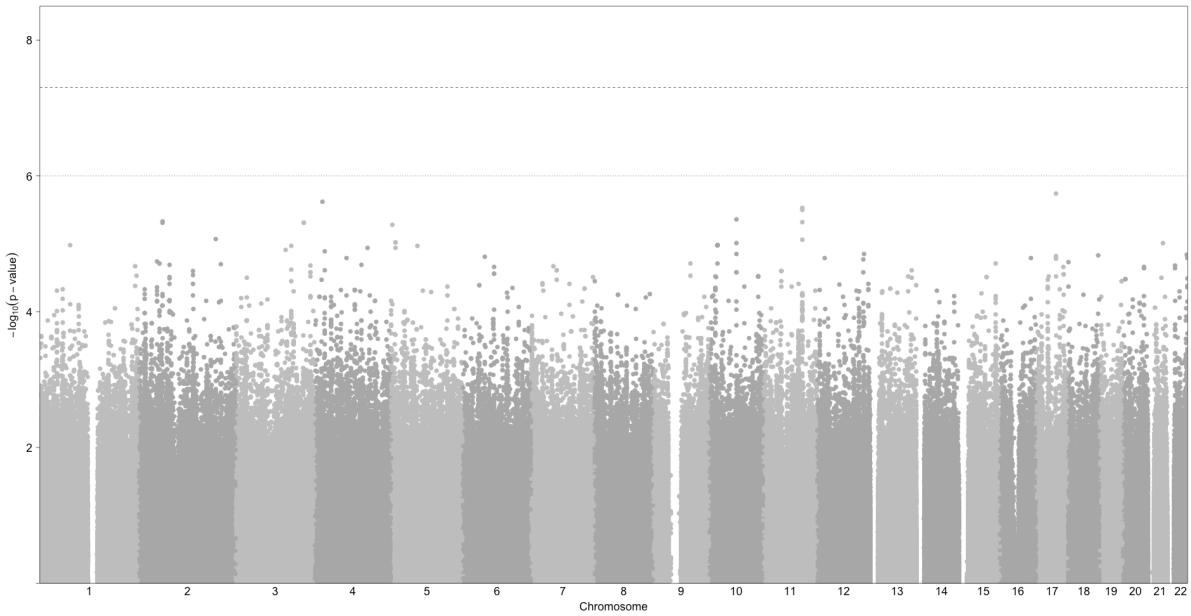
Supplementary Figure S22. Manhattan plot for the acetoacetate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



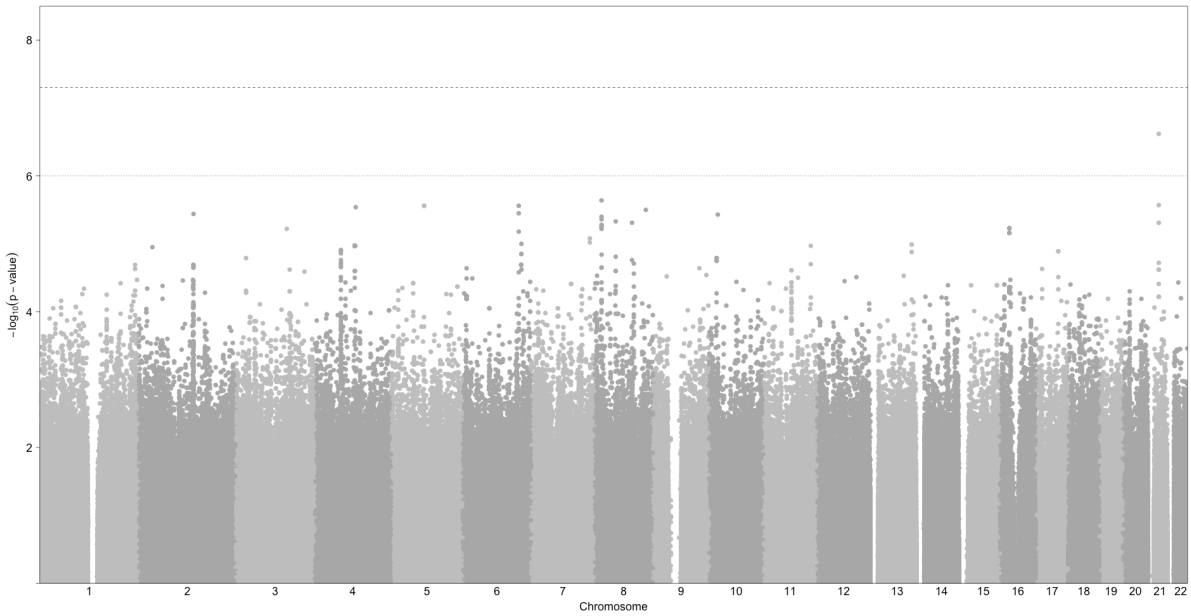
Supplementary Figure S23. Manhattan plot for the creatinine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



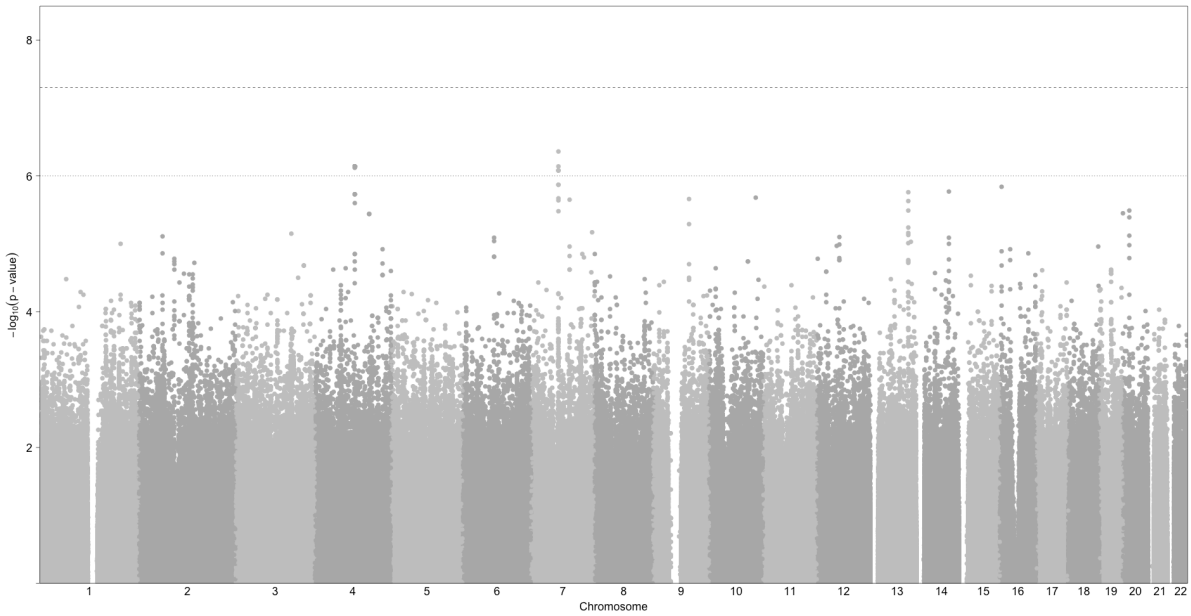
Supplementary Figure S24. Manhattan plot for the acetate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



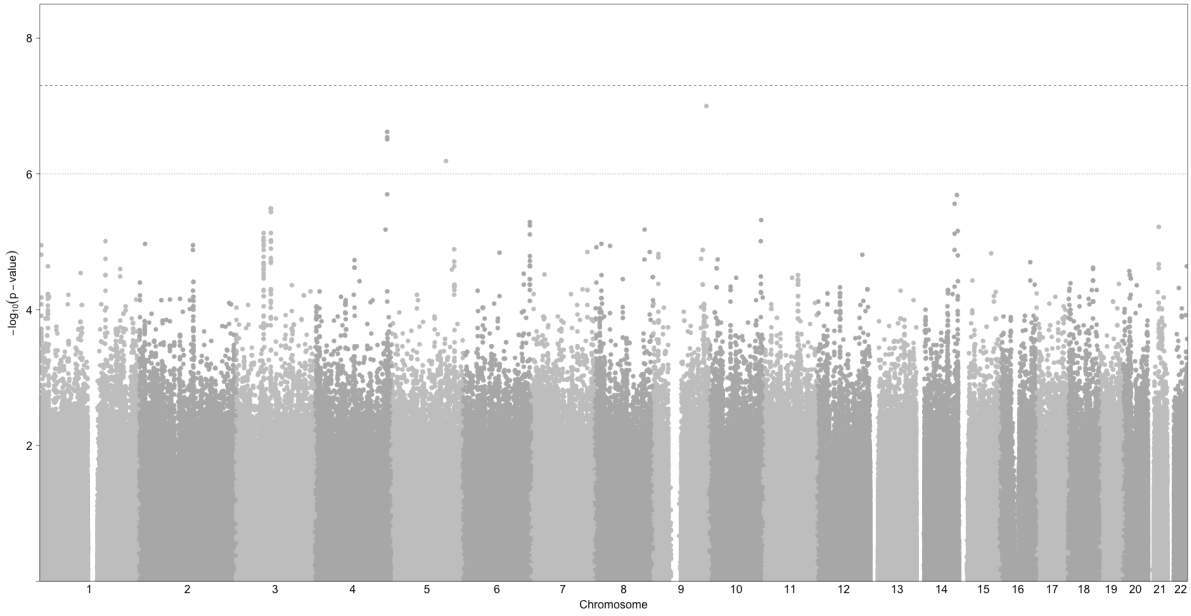
Supplementary Figure S25. Manhattan plot for the acetone GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



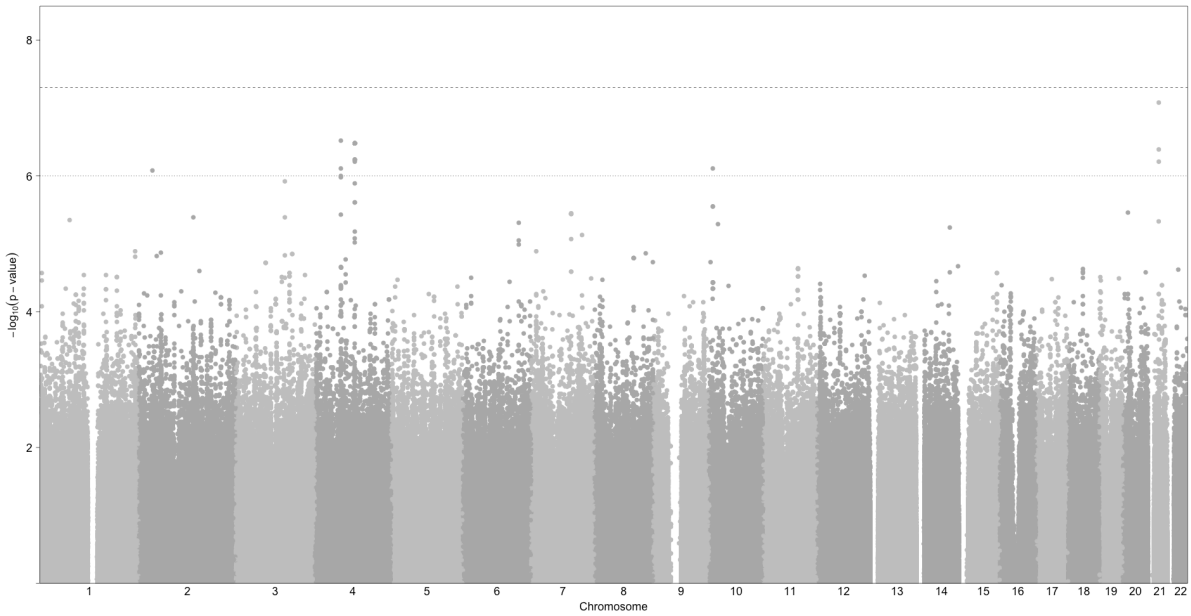
Supplementary Figure S26. Manhattan plot for the alanine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



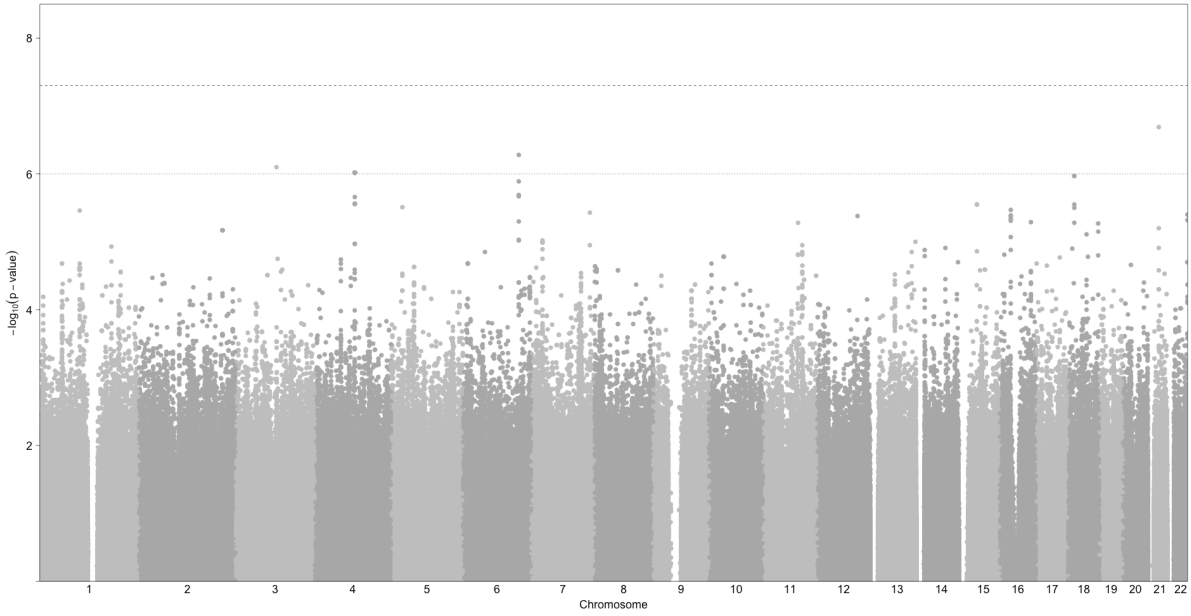
Supplementary Figure S27. Manhattan plot for the citrate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



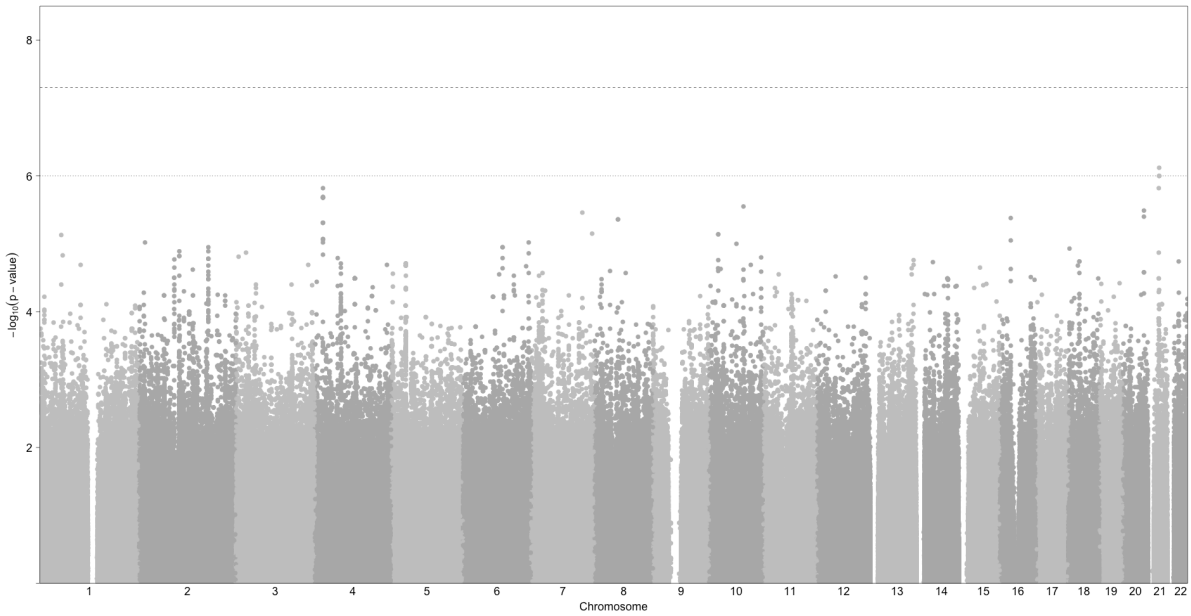
Supplementary Figure S28. Manhattan plot for the creatine GWAS The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



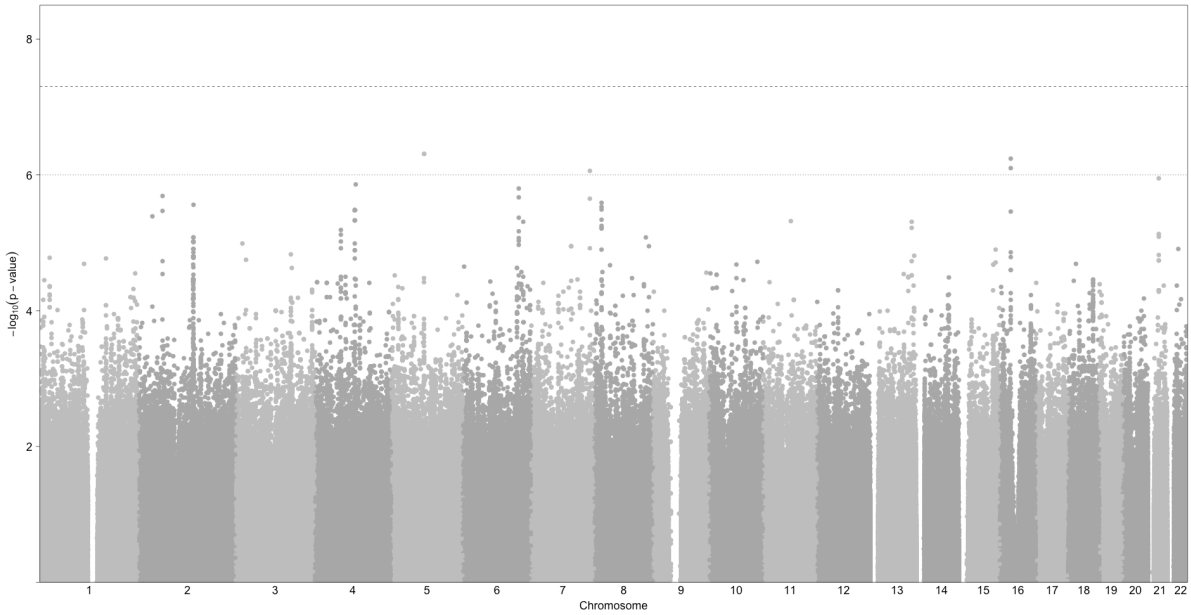
Supplementary Figure S29. Manhattan plot for the formate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



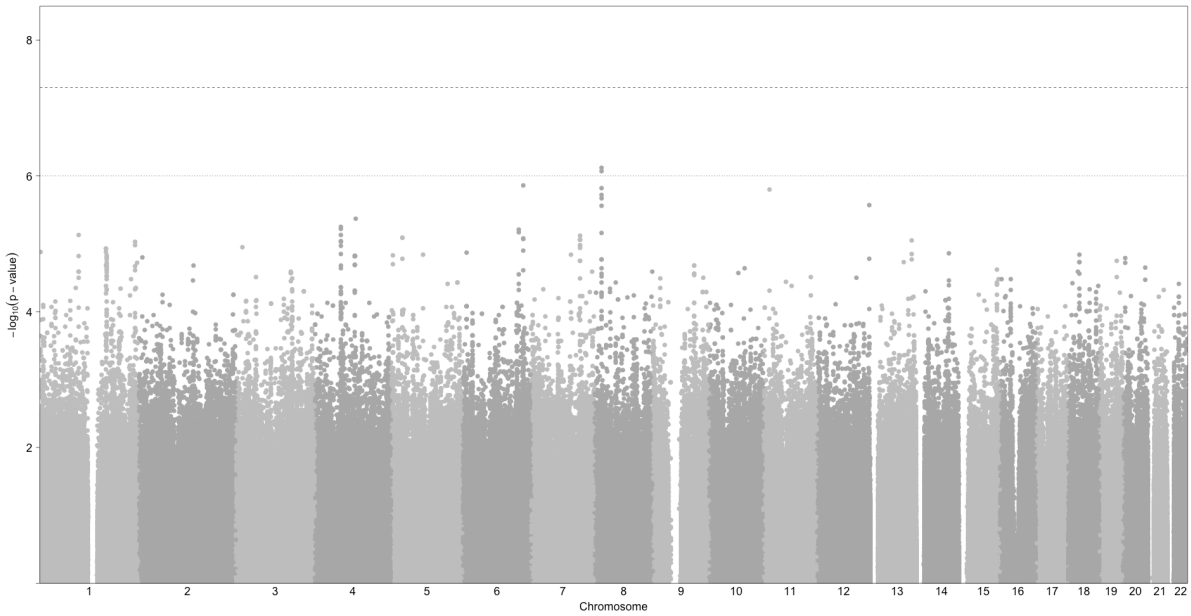
Supplementary Figure S30. Manhattan plot for the glucose GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



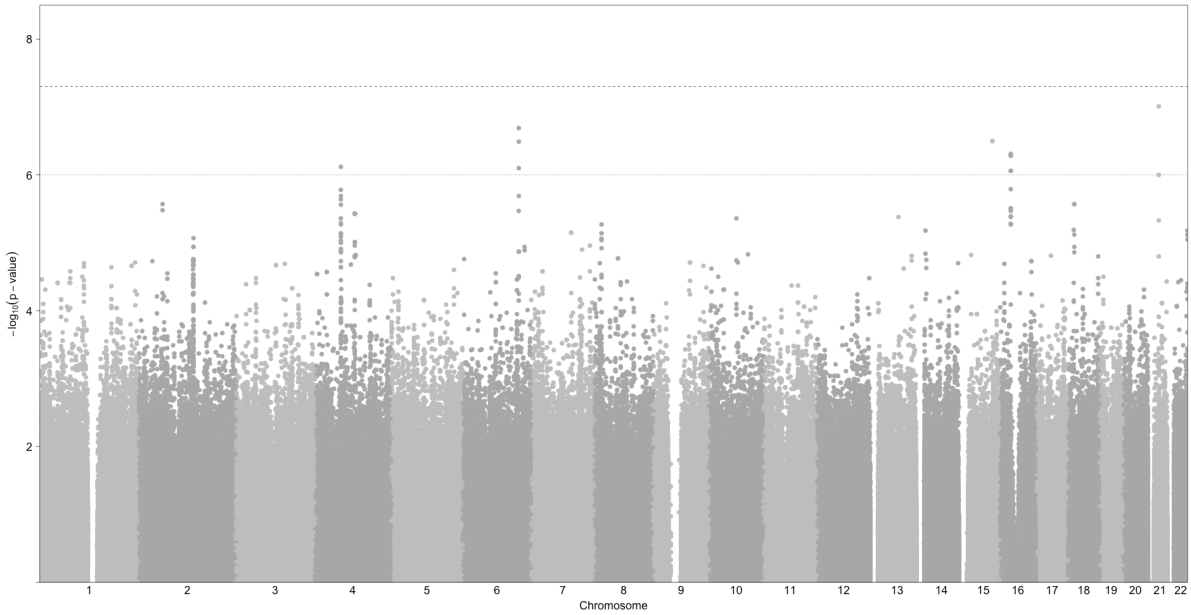
Supplementary Figure S31. Manhattan plot for the glycerol genome-wide association study. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



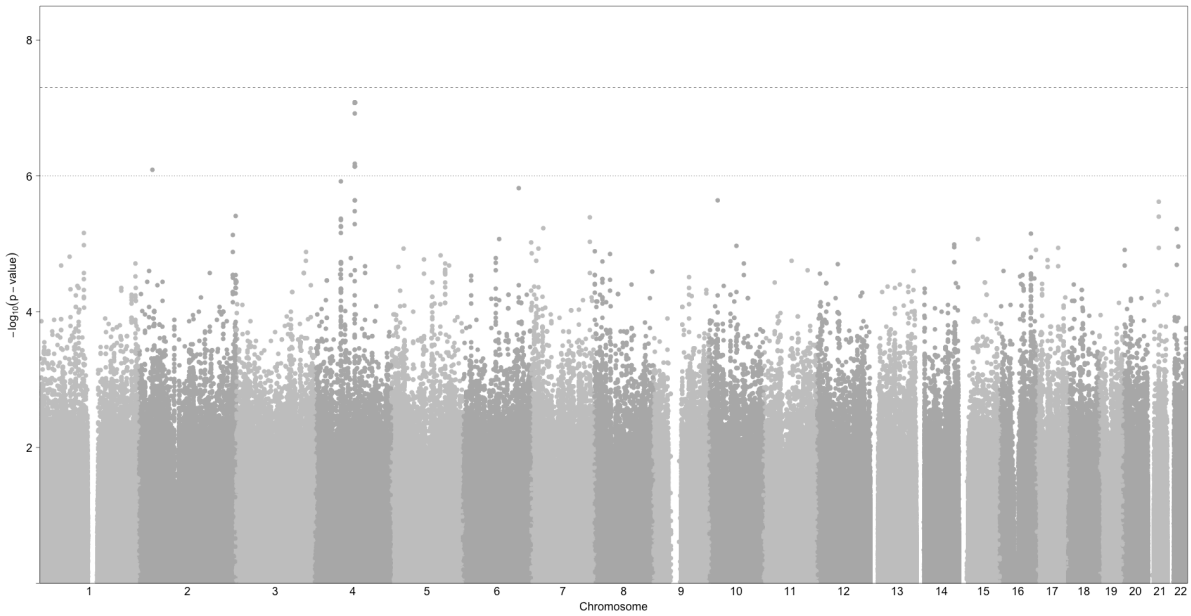
Supplementary Figure S32. Manhattan plot for the glycine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



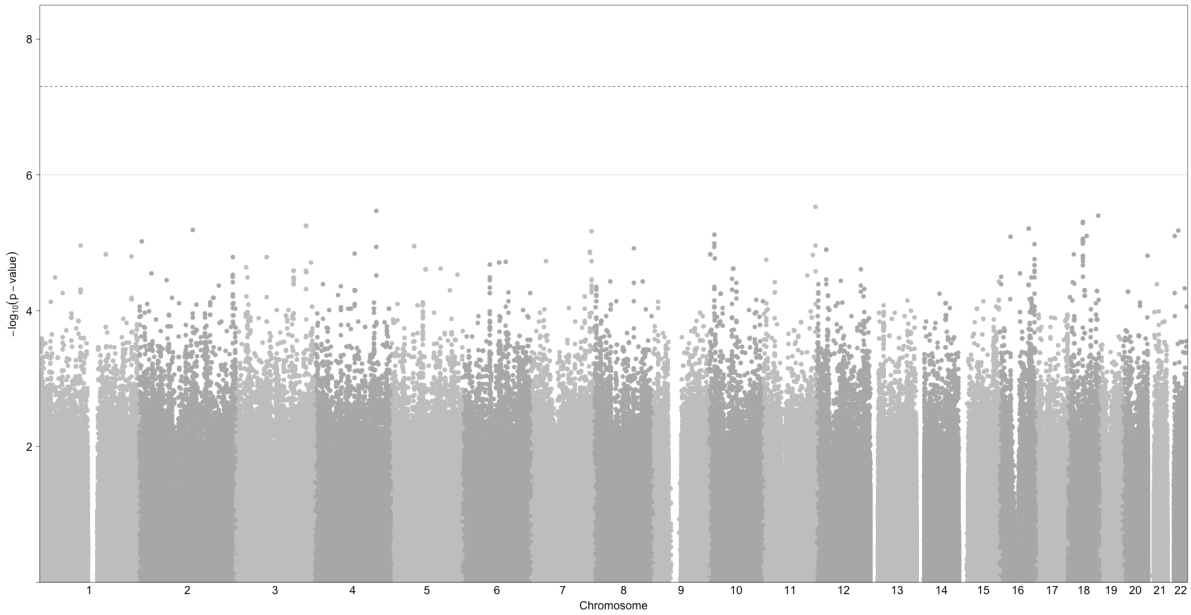
Supplementary Figure S33. Manhattan plot for the lactate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



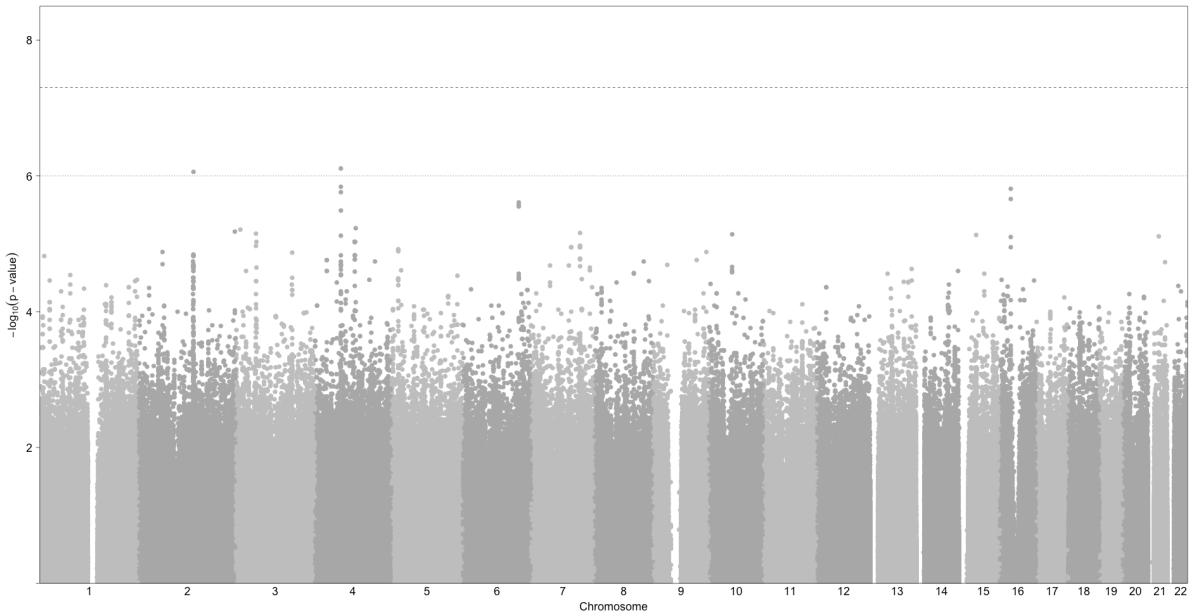
Supplementary Figure S34. Manhattan plot for the leucine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



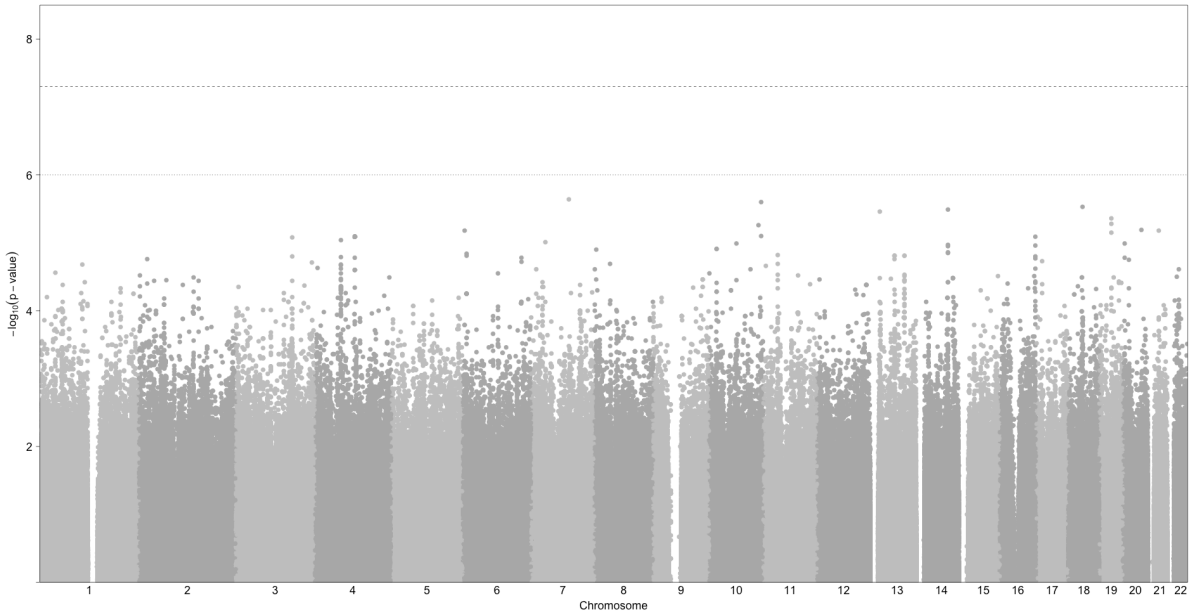
Supplementary Figure S35. Manhattan plot for the methanol GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



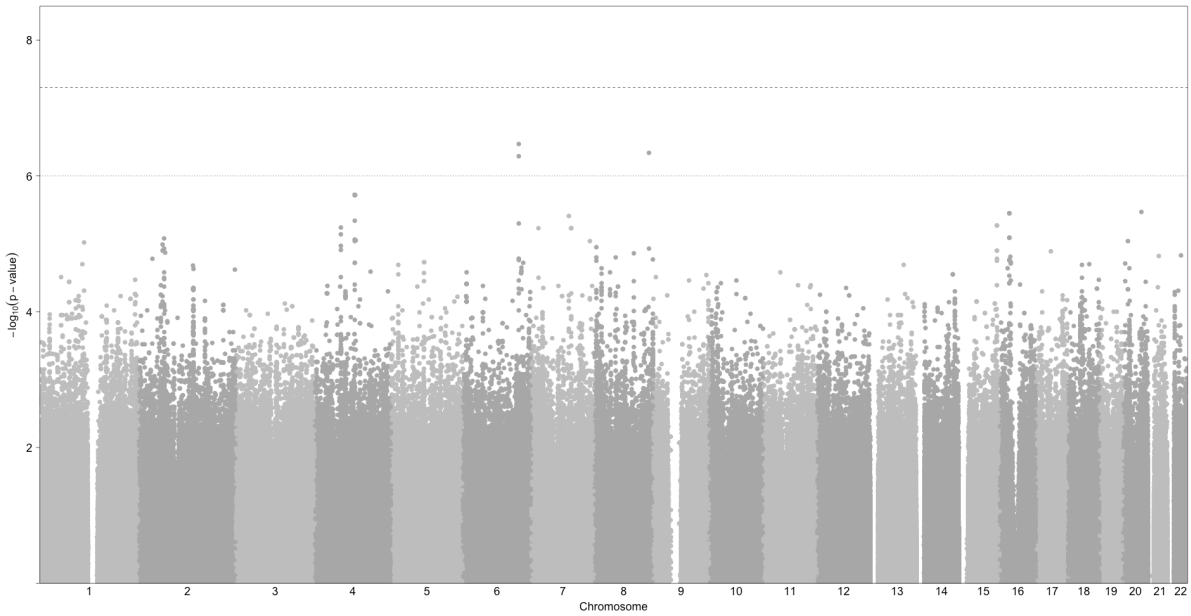
Supplementary Figure S36. Manhattan plot for the myo-inositol GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



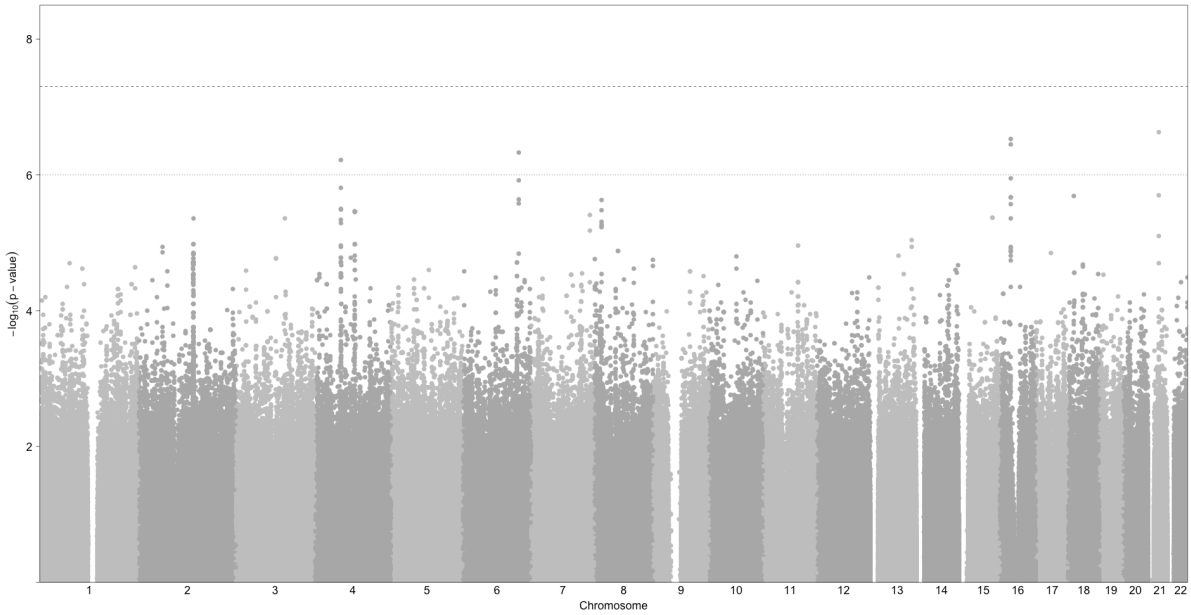
Supplementary Figure S37. Manhattan plot for the phenylalanine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



Supplementary Figure S38. Manhattan plot for the pyruvate GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



Supplementary Figure S39. Manhattan plot for the tyrosine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.



Supplementary Figure S40. Manhattan plot for the valine GWAS. The dashed line denotes 'genome-wide significance' threshold of $p < 5\times10^{-8}$ whilst the dotted line denotes 'suggestive significance' threshold of $p < 1\times10^{-6}$. SNPs with a minor allele frequency (MAF) < 1% were removed.

Supplementary Tables

Supplementary Table S1. Resonance assignments of key metabolites in plasma. The resonances of metabolites were assigned in Chenomx NMR Suite 8.2 and HSQC experiments. Presented are both ^{1}H and ^{13}C chemical shifts of key metabolites. * indicates chemical shift region reported in the Human Metabolome Database spectra but not observed in collected ^{1}H NMR spectra.

Metabolite	Chemical shift: δ^{1}H [ppm] (multiplicity) / δ^{13}C [ppm]
3-hydroxybutyrate	4.137 (m)/68.78, 2.385 (dd)/49.35, 2.296 (dd)/49.27, 1.184 (d)/24.6
Acetate	1.903 (m)/26.09
Acetoacetate	3.427 (s)/56.2, 2.267(s)/32.4
Acetone	2.216 (s)/32.94
Alanine	3.774 (q)/53.28, 1.466 (d)/18.97
Citrate	2.664 (d)/*48.711**, 2.525 (d)/*48.711**
Creatine	3.914 (s)/58.45, 3.026(s)/39.4
Creatinine	4.039 (s)/59.07, 3.029 (s)/32.85
Formate	8.445 (s)/*172.412**
Glucose	5.224 (d)/94.5, *4.634 (d)/98.712**, 3.888 (dd), 3.826 (m), 3.711 (m), 3.526 (dd), 3.367 (m), 3.400 (m), 3.235 (dd)
Glycerol	*3.775 (m)**, 3.644 (m), 3.555 (m)
Glycine	3.557 (s)/44.31
Lactate	4.098 (q)/71.5, 1.314 (d)/*22.903**
Leucine	*3.741 (m)*/56.211**, *1.703 (m)*/42.596**, *1.708 (m)*/26.778**, 0.952 (d)/24.84, 0.941 (d)/23.73
Methanol	3.349 (s)/51.73
Myo inositol	4.057 (t)/77.15, 3.616 (t)/*75.133**, *3.524 (dd)*/73.959**, 3.273 (t)/72.55
Phenylalanine	7.413 (m)/131.7, 7.360 (m)/130.2, 7.319 (m)/132.1, 3.979 (m)/*58.933**, 3.268 (m)/39.3, 3.106 (m)/39.3
Pyruvate	2.358 (s)/29.4
Tyrosine	7.182 (m)/133.18, 6.887 (m)/118.65, 3.934 (dd)/58.83, *3.188 (dd) */38.271**, *3.070 (dd)*/38.271**
Valine	3.595 (d)/63.28, 2.258 (m)/32.07, 1.028 (d)/20.75, 0.976 (d)/19.17

Supplementary Table S2. List of metabolite sample size and number of excluded outliers

Metabolite Phenotype	Sample Size	Number of Excluded Outliers
3-hydroxybutyrate	172	9
Acetate	205	3
Acetoacetate	202	6
Acetone	222	5
Alanine	224	4
Citrate	198	4
Creatine	224	4
Creatinine	224	8
Formate	230	1
Glucose	224	4
Glycerol	201	3
Glycine	224	4
Lactate	224	5
Leucine	223	2
Methanol	222	0
Myo inositol	181	5
Phenylalanine	223	4
Pyruvate	213	7
Tyrosine	224	3
Valine	223	1

Supplementary Table S3. Genetic inflation factors (λ) for each metabolite GWAS.

Metabolite Phenotype	Genetic Inflation Factor (λ)
3-hydroxybutyrate	1.002
Acetate	0.995
Acetoacetate	1.000
Acetone	1.007
Alanine	0.991
Citrate	0.985
Creatine	1.001
Creatinine	1.004
Formate	0.996
Glucose	0.995
Glycerol	0.991
Glycine	0.988
Lactate	0.994
Leucine	0.986
Methanol	0.995
Myo inositol	0.991
Phenylalanine	0.992
Pyruvate	0.987
Tyrosine	0.990
Valine	0.987

Supplementary Table S4. Imputation information for genome-wide significant SNPs (p-value $\leq 5\times10^{-8}$).

Phenotype	SNP	**Genotyped/Imputed**	**R^2**
3-hydroxybutyrate	rs2456680	imputed	0.9840
acetoacetate	rs2213037	imputed	0.9661
acetoacetate	rs10014222	imputed	0.9671
creatinine	rs6851961	genotyped	

Supplementary Table S5. Lead SNPs that did not reach genome-wide significance but reached the threshold for suggestive significance ($p\leq1\times10^{-5}$) .

PHENOTYPE	**SNP**	**CHR**	**BP**	**Imputed/ Genotyped**	**EA**	**NEA**	**MAF**	**BETA**	**SE**	**P**	**Variant type**	**Gene**
creatinine	rs151283409	13	95025755	Imputed	A	G	0.1215	0.7766	0.1388	7.00E-08	Intron Variant	GPC6
methanol	rs28730582	4	100005318	Imputed	C	T	0.9747	1.7099	0.3079	8.28E-08	Intron Variant	ADH5
formate	rs974680	21	27011112	Imputed	A	G	0.1498	0.664	0.1198	8.39E-08	Intron Variant	JAM2
leucine	rs974680	21	27011112	Imputed	A	G	0.1498	0.6796	0.1231	9.77E-08	Intron Variant	JAM2
creatine	rs10118337	9	133874462	Imputed	T	G	0.6538	0.501	0.0908	1.00E-07	Intergenic	
acetate	rs974680	21	27011112	Imputed	A	G	0.1498	0.7147	0.1313	1.57E-07	Intron Variant	JAM2
acetate	rs2016139	8	17374436	Imputed	T	G	0.6063	0.5616	0.1035	1.73E-07	Intron Variant	SLC7A2
creatinine	rs78464812	7	12732041	Imputed	A	G	0.6397	0.5249	0.0975	1.95E-07	Intergenic	
glucose	rs974680	21	27011112	Imputed	A	G	0.1498	0.6546	0.1218	2.05E-07	Intron Variant	JAM2
leucine	rs62440904	6	139825903	Imputed	C	T	0.6447	0.5142	0.0957	2.05E-07	Intergenic	
valine	rs974680	21	27011112	Imputed	A	G	0.1498	0.6591	0.1234	2.37E-07	Intron Variant	JAM2
creatine	rs2161379	4	181524552	Imputed	A	G	0.6144	0.4772	0.0894	2.39E-07	Intergenic	
alanine	rs974680	21	27011112	Imputed	A	G	0.1498	0.6726	0.126	2.43E-07	Intron Variant	JAM2
valine	rs4787936	16	27178152	Imputed	A	T	0.6407	0.5146	0.0972	2.96E-07	Intron Variant	LINC02129
formate	rs1842955	4	65309678	Genotyped	C	T	0.4443	0.4578	0.0866	3.03E-07	Intergenic	
leucine	rs79424822	15	83626379	Imputed	C	T	0.0142	1.7162	0.3248	3.13E-07	Intron Variant	HOMER2
formate	rs28730582	4	100005318	Imputed	C	T	0.9747	1.6442	0.3123	3.33E-07	Intron Variant	ADH5
tyrosine	rs62440904	6	139825903	Imputed	C	T	0.6447	0.5048	0.0959	3.42E-07	Intergenic	
acetoacetate	rs117633404	18	75224932	Imputed	T	G	0.9686	1.3274	0.2519	3.74E-07	Intron Variant	LOC107985172

creatinine	rs291844	5	102859998	Imputed	T	A	0.5425	0.4719	0.0899	3.83E-07	Intergenic	
citrate	rs7799107	7	68315408	Imputed	G	A	0.6751	0.522	0.0996	4.35E-07	Intergenic	
tyrosine	rs2199922	8	136244326	Imputed	T	C	0.1002	0.8248	0.1585	4.57E-07	Intergenic	
valine	rs2430189	6	139825880	Imputed	C	T	0.5	0.4801	0.0923	4.64E-07	Intergenic	
leucine	rs12922798	16	27179711	Imputed	G	A	0.7287	0.5632	0.1085	4.89E-07	Intron Variant	LINC02129
glycine	rs140738918	5	83206174	Imputed	G	A	0.0294	1.2852	0.2476	4.91E-07	Intergenic	
acetoacetate	rs7850975	9	133875164	Imputed	G	A	0.251	0.5688	0.1094	5.23E-07	Intergenic	
glucose	rs9484280	6	139826062	Imputed	A	G	0.5587	0.4634	0.0895	5.25E-07	Intergenic	
acetoacetate	rs78503133	4	179580467	Imputed	G	A	0.919	0.8832	0.1705	5.72E-07	Intergenic	
glycine	rs4281711	16	27179458	Imputed	C	T	0.6356	0.5011	0.0971	5.73E-07	Intron Variant	LINC02129
valine	rs1842955	4	65309678	Genotyped	C	T	0.4443	0.4524	0.0879	5.99E-07	Intergenic	
creatine	rs12152988	5	137954954	Imputed	G	A	0.9767	1.6023	0.3121	6.45E-07	Intergenic	
citrate	rs28730582	4	100005318	Imputed	C	T	0.9747	1.5908	0.3102	7.31E-07	Intron Variant	ADH5
lactate	rs2016139	8	17374436	Imputed	T	G	0.6063	0.5124	0.1005	7.53E-07	Intron Variant	SLC7A2
glycerol	rs62216543	21	27960090	Imputed	A	G	0.916	0.8766	0.1713	7.61E-07	Intergenic	
leucine	rs6851961	4	65351771	Genotyped	G	A	0.4868	0.4709	0.0924	7.67E-07	Intergenic	
formate	rs72782684	10	9051715	Genotyped	G	A	0.0233	1.5249	0.2998	7.81E-07	Intergenic	
phenylalanine	rs28510752	4	65306505	Imputed	C	T	0.5283	0.4448	0.0873	7.85E-07	Intergenic	
glucose	rs75182077	3	101671963	Imputed	T	C	0.8856	0.7287	0.1431	7.87E-07	Intron Variant	LINC02085
3-hydroxybutyrate	rs6983700	8	101516602	Genotyped	T	C	0.1174	0.8091	0.1576	8.21E-07	Intergenic	
methanol	rs75336470	2	33726460	Imputed	A	G	0.9342	0.8754	0.1723	8.22E-07	Intron Variant	RASGRP3
acetoacetate	rs76485411	3	170298562	Imputed	G	A	0.9879	2.5108	0.4922	8.26E-07	Intron Variant	SLC7A14-AS1, SLC7A14
formate	rs75336470	2	33726460	Imputed	A	G	0.9342	0.8562	0.1688	8.29E-07	Intron Variant	RASGRP3
phenylalanine	rs72974161	2	136802456	Imputed	C	T	0.9069	0.8339	0.1644	8.65E-07	Intergenic	
glycine	rs4282492	7	147217895	Imputed	T	A	0.7986	0.5887	0.1161	8.67E-07	Intron Variant	CNTNAP2

glucose	rs28730582	4	100005318	Imputed	C	T	0.9747	1.5551	0.3079	9.48E-07	Intron Variant	ADH5
creatinine	rs34324511	9	133873823	Imputed	G	A	0.917	0.916	0.1817	1.01E-06	Intergenic	
glucose	rs4116764	18	15122329	Imputed	T	C	0.8877	0.7219	0.1436	1.07E-06	Intergenic	
3-hydroxybutyrate	rs7850975	9	133875164	Imputed	G	A	0.251	0.6078	0.1199	1.11E-06	Intergenic	
glycine	rs974680	21	27011112	Imputed	A	G	0.1498	0.6371	0.127	1.12E-06	Intron Variant	JAM2
acetoacetate	rs116974960	20	6245349	Imputed	C	G	0.9889	2.4758	0.4928	1.18E-06	Intergenic	
methanol	rs11131536	4	65306853	Imputed	C	A	0.4899	0.4276	0.0855	1.20E-06	Intergenic	
formate	rs9842287	3	122756143	Imputed	T	C	0.2328	0.5582	0.1118	1.21E-06	Intergenic	
acetoacetate	rs189418887	10	35271898	Imputed	T	G	0.9818	1.7366	0.3465	1.25E-06	Intergenic	
glycine	rs77762405	4	102560900	Imputed	G	C	0.8927	0.7593	0.1528	1.39E-06	Intergenic	
lactate	rs6920957	6	151043035	Imputed	G	A	0.6923	0.484	0.0974	1.39E-06	Intron Variant	PLEKHG1
acetate	rs34003508	5	18792823	Imputed	C	T	0.2308	0.5513	0.1108	1.44E-06	Intergenic	
citrate	rs7196914	16	4194688	Imputed	G	A	0.4251	0.5045	0.1013	1.44E-06	Intergenic	
3-hydroxybutyrate	rs73223826	4	11471671	Imputed	C	T	0.9504	1.2711	0.2539	1.47E-06	Intron Variant	LOC107986178
acetoacetate	rs12830228	12	55525832	Imputed	C	T	0.1518	0.7265	0.146	1.48E-06	3 Prime UTR Variant	OR9K2
glycerol	rs16869609	4	20449733	Imputed	T	C	0.1275	0.7441	0.1498	1.51E-06	Intron Variant	SLIT2
glycerol	rs974680	21	27011112	Imputed	A	G	0.1498	0.6524	0.1313	1.52E-06	Intron Variant	JAM2
methanol	rs62440904	6	139825903	Imputed	C	T	0.6447	0.4756	0.0961	1.52E-06	Intergenic	
phenylalanine	rs4281711	16	27179458	Imputed	C	T	0.6356	0.4857	0.0982	1.55E-06	Intron Variant	LINC02129
glycine	rs62440904	6	139825903	Imputed	C	T	0.6447	0.4773	0.0966	1.59E-06	Intergenic	
lactate	rs75987636	11	15830261	Imputed	A	G	0.9626	1.2083	0.2446	1.59E-06	Intergenic	
creatinine	rs4126639	1	54001823	Imputed	G	A	0.417	0.4764	0.0965	1.63E-06	Intron Variant	GLIS1
leucine	rs1842955	4	65309678	Genotyped	C	T	0.4443	0.4374	0.0887	1.65E-06	Intergenic	
citrate	rs1885604	14	81763955	Imputed	C	T	0.7844	0.6055	0.1225	1.71E-06	Intron Variant	STON2

citrate	rs9524472	13	95039482	Imputed	G	A	0.1862	0.5964	0.1207	1.72E-06	Intron Variant	GPC6
acetone	rs2631539	17	50364354	Imputed	G	A	0.9524	1.0919	0.2222	1.80E-06	Intergenic	
tyrosine	rs28730582	4	100005318	Imputed	C	T	0.9747	1.5359	0.3134	1.89E-06	Intron Variant	ADH5
creatine	rs71424462	14	101938613	Imputed	T	C	0.9615	1.4046	0.2874	2.02E-06	Intron Variant	LOC105370672
creatinine	rs13154681	5	28647594	Imputed	T	C	0.0415	1.0094	0.2065	2.03E-06	Intergenic	
valine	rs151068546	18	13863862	Imputed	C	T	0.9747	1.4844	0.3039	2.04E-06	Intergenic	
glycine	rs42845	2	59109090	Imputed	C	G	0.8107	0.589	0.1206	2.05E-06	Intron Variant	LINC01122
citrate	rs140546776	10	116654538	Imputed	T	G	0.0132	2.4008	0.4899	2.08E-06	Intron Variant	FHIP2A
citrate	rs6560041	9	90495370	Genotyped	T	C	0.496	0.4799	0.0982	2.20E-06	Intron Variant	LOC497256
citrate	rs2969415	7	96411589	Imputed	A	G	0.2834	0.5531	0.1133	2.25E-06	Intergenic	
alanine	rs2213906	8	17377057	Imputed	G	C	0.6215	0.4947	0.1018	2.27E-06	Intron Variant	SLC7A2
methanol	rs12414680	10	21233596	Imputed	G	T	0.1953	0.5486	0.1129	2.27E-06	Intron Variant	NEBL
pyruvate	rs4729162	7	94516931	Imputed	G	C	0.1761	0.6448	0.1324	2.28E-06	Intergenic	
valine	rs2213906	8	17377057	Imputed	G	C	0.6215	0.4932	0.1016	2.33E-06	Intron Variant	SLC7A2
acetoacetate	rs2725566	15	54233434	Imputed	T	A	0.416	0.49	0.1006	2.38E-06	Intron Variant	UNC13C
acetoacetate	rs11016273	10	130290907	Imputed	G	A	0.7682	0.5202	0.1069	2.40E-06	Intergenic	
methanol	rs974680	21	27011112	Imputed	A	G	0.1498	0.6053	0.1249	2.41E-06	Intron Variant	JAM2
acetone	rs115858347	4	19058455	Imputed	T	C	0.0435	1.1475	0.2366	2.42E-06	Intergenic	
phenylalanine	rs12196202	6	139826787	Imputed	C	T	0.6437	0.472	0.0975	2.47E-06	Intergenic	
pyruvate	rs881078	10	130258262	Imputed	T	C	0.4919	0.485	0.1	2.49E-06	Intergenic	
3-hydroxybutyrate	rs144759118	21	22274187	Imputed	C	T	0.9312	1.0695	0.2191	2.55E-06	Intergenic	
glycine	rs2213906	8	17377057	Imputed	G	C	0.6215	0.4903	0.1014	2.57E-06	Intron Variant	SLC7A2
acetoacetate	rs72974161	2	136802456	Imputed	C	T	0.9069	0.8181	0.1687	2.60E-06	Intergenic	
lactate	rs11060939	12	130968456	Imputed	A	G	0.248	0.515	0.1067	2.67E-06	Intron Variant	RIMBP2
leucine	rs4116764	18	15122329	Imputed	T	C	0.8877	0.7052	0.1462	2.68E-06	Intergenic	

leucine	rs42845	2	59109090	Imputed	C	G	0.8107	0.5874	0.1218	2.68E-06	Intron Variant	LINC01122
creatinine	rs76902478	11	87370685	Imputed	G	A	0.9474	0.967	0.2004	2.70E-06	Intron Variant	LOC107984361
creatine	rs72696922	14	96078199	Genotyped	T	G	0.0192	1.6074	0.3335	2.74E-06	Intergenic	
glycine	rs72974161	2	136802456	Imputed	C	T	0.9069	0.7878	0.1635	2.75E-06	Intergenic	
alanine	rs140738918	5	83206174	Imputed	G	A	0.0294	1.2051	0.2501	2.77E-06	Intergenic	
alanine	rs62440904	6	139825903	Imputed	C	T	0.6447	0.4671	0.097	2.78E-06	Intergenic	
creatinine	rs34347878	12	4308303	Imputed	A	G	0.0405	1.0647	0.2209	2.78E-06	Intron Variant	LOC105369612
glycerol	rs7923287	10	85841432	Imputed	T	A	0.7561	0.56	0.1159	2.81E-06	Intergenic	
glucose	rs117919743	15	44671417	Imputed	C	A	0.0476	1.0538	0.2189	2.83E-06	Intron Variant	GOLM2
alanine	rs77762405	4	102560900	Imputed	G	C	0.8927	0.7346	0.1527	2.87E-06	Intergenic	
creatinine	rs1989820	5	135996417	Imputed	A	G	0.3421	0.4785	0.0995	2.89E-06	Intergenic	
myo-inositol	rs79419630	11	131250632	Imputed	A	G	0.0911	0.8697	0.1796	2.92E-06	Intron Variant	NTM
3-hydroxybutyrate	rs2584557	8	12911318	Imputed	T	C	0.4615	0.4681	0.0965	2.93E-06	Intergenic	
acetoacetate	rs2441739	10	68249299	Imputed	G	A	0.5111	0.4459	0.0925	2.94E-06	Intron Variant	CTNNA3
pyruvate	rs12605861	18	35828418	Imputed	G	A	0.418	0.4842	0.1006	2.96E-06	Intergenic	
acetone	rs499053	11	97980407	Imputed	T	G	0.664	0.4614	0.096	2.97E-06	Intergenic	
creatinine	rs1842955	4	65309678	Genotyped	C	T	0.4443	0.4286	0.0893	3.06E-06	Intergenic	
acetoacetate	rs272564	1	45012273	Imputed	A	C	0.7328	0.5388	0.112	3.07E-06	Intron Variant	RNF220
glucose	rs13154681	5	28647594	Imputed	T	C	0.0415	0.9653	0.2014	3.10E-06	Intergenic	
3-hydroxybutyrate	rs76766851	10	20868527	Imputed	G	A	0.9777	1.983	0.4102	3.14E-06	Intergenic	
alanine	rs77569096	8	128468955	Imputed	G	A	0.1933	0.5632	0.1176	3.17E-06	Intron Variant	CASC8
acetate	rs313294	2	126076783	Imputed	G	C	0.581	0.4629	0.0964	3.18E-06	Intergenic	
valine	rs6851961	4	65351771	Genotyped	G	A	0.4868	0.4447	0.0929	3.19E-06	Intergenic	
glycerol	rs11908225	20	52754251	Imputed	A	G	0.9808	1.2966	0.2702	3.24E-06	Intergenic	
citrate	rs813522	20	16053367	Imputed	G	A	0.5344	0.4925	0.1026	3.25E-06	Intergenic	

creatine	rs75450658	3	87631715	Imputed	A	G	0.0698	0.9017	0.1886	3.25E-06	Intergenic	
pyruvate	rs61995266	14	79428666	Imputed	T	C	0.9221	0.8343	0.1741	3.25E-06	Intron Variant	NRXN3
creatinine	rs624882	11	119386445	Imputed	T	C	0.3138	0.5207	0.1088	3.26E-06	Intergenic	
glycine	rs28730582	4	100005318	Imputed	C	T	0.9747	1.492	0.3122	3.31E-06	Intron Variant	ADH5
glucose	rs1554171	16	27174629	Imputed	G	A	0.7713	0.5455	0.1143	3.37E-06	Intron Variant	LINC02129
myo-inositol	rs62323709	4	154168467	Imputed	G	A	0.1316	0.7205	0.1499	3.39E-06	Intron Variant	TRIM2, LOC105377496
tyrosine	rs62201701	20	46359257	Imputed	C	T	0.9818	1.5675	0.3286	3.42E-06	Intron Variant	SULF2
acetate	rs79278805	10	22686205	Genotyped	A	G	0.9575	1.1402	0.2384	3.43E-06	Intron Variant	SPAG6
glycerol	rs2402901	7	128273555	Imputed	C	T	0.9808	1.5931	0.3329	3.43E-06	Intron Variant	LOC101928451
valine	rs28730582	4	100005318	Imputed	C	T	0.9747	1.4961	0.3137	3.43E-06	Intron Variant	ADH5
glucose	rs611421	1	100540289	Imputed	A	G	0.8613	0.6577	0.1379	3.44E-06	Intron Variant	MFSD14A
pyruvate	rs147480013	13	23654393	Imputed	C	G	0.0263	1.3109	0.2744	3.47E-06	Intergenic	
formate	rs17190458	20	12602813	Imputed	A	T	0.0456	1.0331	0.217	3.50E-06	Intergenic	
tyrosine	rs249938	16	23626521	Imputed	T	C	0.0597	0.9169	0.1925	3.51E-06	Intron Variant	PALB2
citrate	rs1836445	20	81979	Imputed	C	T	0.2348	0.553	0.1157	3.55E-06	Intergenic	
formate	rs117054545	7	100375134	Imputed	G	A	0.9686	1.144	0.2405	3.57E-06	Intron Variant	ZAN
alanine	rs72974161	2	136802456	Imputed	C	T	0.9069	0.7813	0.1643	3.66E-06	Intergenic	
citrate	rs115698394	4	136303552	Imputed	G	C	0.0122	2.3466	0.4915	3.66E-06	Intergenic	
leucine	rs28730582	4	100005318	Imputed	C	T	0.9747	1.4929	0.3141	3.69E-06	Intron Variant	ADH5
alanine	rs78997301	10	21569519	Imputed	G	A	0.0142	1.9071	0.4012	3.71E-06	Intron Variant	NEBL
glucose	rs4282492	7	147217895	Imputed	T	A	0.7986	0.5505	0.1158	3.72E-06	Intron Variant	CNTNAP2
valine	rs2008168	7	147216870	Imputed	T	C	0.7783	0.5603	0.1181	3.86E-06	Intron Variant	CNTNAP2
tyrosine	rs4729162	7	94516931	Imputed	G	C	0.1761	0.6159	0.1299	3.89E-06	Intergenic	
methanol	rs151200016	2	242593877	Imputed	G	A	0.1559	0.6102	0.1287	3.91E-06	Intron Variant	ATG4B
glycerol	rs62215596	20	52689292	Imputed	C	T	0.9474	1.0004	0.2104	3.94E-06	Intergenic	
creatinine	rs61995266	14	79428666	Imputed	T	C	0.9221	0.8201	0.1731	3.99E-06	Intron Variant	NRXN3

glucose	rs1555049	22	50712925	Imputed	G	C	0.4008	0.4482	0.0946	4.00E-06	500B Downstream Variant	PLXNB2
myo-inositol	rs117633404	18	75224932	Imputed	T	G	0.9686	1.244	0.2609	4.02E-06	Intron Variant	LOC107985172
acetate	rs28730582	4	100005318	Imputed	C	T	0.9747	1.5812	0.3332	4.04E-06	Intron Variant	ADH5
formate	rs10187054	2	136388473	Imputed	T	C	0.8715	0.6756	0.1429	4.06E-06	Intron Variant	R3HDM1
glycine	rs75336470	2	33726460	Imputed	A	G	0.9342	0.8277	0.1749	4.08E-06	Intron Variant	RASGRP3
methanol	rs2008168	7	147216870	Imputed	T	C	0.7783	0.5578	0.1179	4.08E-06	Intron Variant	CNTNAP2
glycerol	rs4787936	16	27178152	Imputed	A	T	0.6407	0.4962	0.1046	4.13E-06	Intron Variant	LINC02129
acetate	rs9923988	16	88840554	Imputed	G	C	0.3846	0.5101	0.1076	4.15E-06	Intron Variant	PIEZO1
leucine	rs1424315	13	70434557	Imputed	C	T	0.1053	0.6972	0.1475	4.17E-06	Intron Variant	KLHL1
3-hydroxybutyrate	rs2213037	4	100160177	Imputed	C	T	0.9717	1.5024	0.3151	4.19E-06	Intron Variant	LOC100507053
glucose	rs73159714	12	101676071	Imputed	T	C	0.0162	1.7637	0.3733	4.21E-06	Intron Variant	UTP20
lactate	rs77762405	4	102560900	Imputed	G	C	0.8927	0.7241	0.1533	4.23E-06	Intergenic	
valine	rs79424822	15	83626379	Imputed	C	T	0.0142	1.5508	0.3285	4.25E-06	Intron Variant	HOMER2
acetone	rs2441735	10	68240373	Imputed	A	T	0.502	0.4253	0.0901	4.33E-06	Intron Variant	CTNNA3
valine	rs9842287	3	122756143	Imputed	T	C	0.2328	0.5404	0.1146	4.33E-06	Intergenic	
valine	rs72974161	2	136802456	Imputed	C	T	0.9069	0.7803	0.1654	4.34E-06	Intergenic	
glycerol	rs147694655	8	58611915	Imputed	G	C	0.9787	1.9179	0.4055	4.40E-06	Intergenic	
pyruvate	rs4805449	19	30116004	Imputed	G	A	0.7824	0.5323	0.1127	4.40E-06	Intergenic	
leucine	rs2441739	10	68249299	Imputed	G	A	0.5111	0.4151	0.0881	4.41E-06	Intron Variant	CTNNA3
formate	rs79696701	1	75363713	Imputed	C	G	0.9494	0.9354	0.1988	4.49E-06	Intergenic	
acetoacetate	rs42845	2	59109090	Imputed	C	G	0.8107	0.608	0.1287	4.53E-06	Intron Variant	LINC01122
3-hydroxybutyrate	rs321534	3	25200846	Imputed	G	T	0.8209	0.6111	0.1286	4.53E-06	Intron Variant	RARB
acetate	rs4729162	7	94516931	Imputed	G	C	0.1761	0.6316	0.1339	4.60E-06	Intergenic	
formate	rs4637211	21	26824158	Imputed	A	G	0.081	0.8161	0.1737	4.63E-06	Intergenic	

acetate	rs28510752	4	65306505	Imputed	C	T	0.5283	0.4274	0.0907	4.70E-06	Intergenic	
alanine	rs6991598	8	52913147	Imputed	C	A	0.086	0.7537	0.1604	4.70E-06	Intergenic	
acetone	rs42845	2	59109090	Imputed	C	G	0.8107	0.5718	0.1217	4.73E-06	Intron Variant	LINC01122
glycine	rs138965218	11	69310534	Imputed	T	C	0.0172	1.5412	0.3281	4.75E-06	Intergenic	
x3_hydroxybutyrate	rs12137897	1	108304301	Imputed	A	G	0.1184	0.7855	0.1658	4.76E-06	Intron Variant	VAV3
creatine	rs881078	10	130258262	Imputed	T	C	0.4919	0.468	0.0997	4.83E-06	Intergenic	
myo_inositol	rs59868802	18	36691083	Imputed	A	T	0.9119	0.8191	0.1733	4.85E-06	Intergenic	
formate	rs9484280	6	139826062	Imputed	A	G	0.5587	0.426	0.0909	4.87E-06	Intergenic	
alanine	rs150880306	8	93835392	Imputed	G	T	0.0142	1.8775	0.4002	4.88E-06	Intergenic	
glycine	rs9557956	13	103579895	Imputed	G	A	0.7632	0.5407	0.1153	4.92E-06	Intergenic	
glycine	rs6920957	6	151043035	Imputed	G	A	0.6923	0.4581	0.0977	4.94E-06	Intron Variant	PLEKHG1
acetone	rs76485411	3	170298562	Imputed	G	A	0.9879	2.3387	0.4987	4.95E-06	Intron Variant	SLC7A14-AS1, SLC7A14
acetate	rs11526042	12	123932679	Imputed	A	C	0.2692	0.4871	0.1038	5.06E-06	Intergenic	
formate	rs78963087	10	21989006	Imputed	A	G	0.2409	0.5344	0.1143	5.08E-06	Intron Variant	MLLT10
glucose	rs57422819	16	77792432	Imputed	G	A	0.5739	0.4472	0.0955	5.08E-06	Intron Variant	LOC107984878
3-hydroxybutyrate	rs2672721	5	451683	Imputed	C	T	0.5506	0.5035	0.1066	5.10E-06	Intron Variant	EXOC3
3-hydroxybutyrate	rs72688117	4	127265692	Imputed	G	A	0.2146	0.5924	0.1254	5.10E-06	Intergenic	
3-hydroxybutyrate	rs80349349	16	8565498	Imputed	G	T	0.9676	1.6627	0.3521	5.10E-06	Intergenic	
acetate	rs2402901	7	128273555	Imputed	C	T	0.9808	1.5773	0.3363	5.15E-06	Intron Variant	LOC101928451
creatine	rs35686527	6	167659709	Imputed	T	G	0.167	0.6323	0.1352	5.18E-06	Intron Variant	LOC102725048
creatinine	rs28675967	22	43899258	Imputed	G	A	0.0476	1.1261	0.2407	5.23E-06	Intron Variant	MPPED1
acetone	rs72722987	5	3472585	Imputed	G	C	0.9342	0.9825	0.2101	5.25E-06	Intron Variant	LINC01019
glucose	rs76902478	11	87370685	Imputed	G	A	0.9474	0.9172	0.1963	5.28E-06	Intron Variant	LOC107984361

leucine	rs2213906	8	17377057	Imputed	G	C	0.6215	0.4775	0.1023	5.37E-06	Intron Variant	SLC7A2
glucose	rs9960190	18	75116363	Imputed	G	A	0.1012	0.6676	0.143	5.41E-06	Intron Variant	LOC107985171
tyrosine	rs16949076	15	94935064	Imputed	A	G	0.1113	0.6802	0.1457	5.41E-06	Intron Variant	MCTP2
pyruvate	rs35526582	10	123575926	Imputed	C	T	0.9636	1.2458	0.2666	5.49E-06	Intron Variant	ATE1
lactate	rs1483292	4	65322597	Imputed	G	T	0.5547	0.4268	0.0916	5.66E-06	Intergenic	
methanol	rs17085104	4	65436020	Imputed	T	C	0.3877	0.4353	0.0935	5.67E-06	Intergenic	
myo-inositol	rs62287490	3	175996407	Imputed	A	G	0.1306	0.7722	0.1647	5.68E-06	Intergenic	
tyrosine	rs1842955	4	65309678	Genotyped	C	T	0.4443	0.4178	0.0898	5.79E-06	Intergenic	
formate	rs4899836	14	84101142	Imputed	A	G	0.0213	1.4191	0.3054	5.81E-06	Intergenic	
tyrosine	rs1178320	7	18238845	Imputed	A	C	0.3168	0.4793	0.1031	5.88E-06	Intron Variant	HDAC9
acetate	rs35621847	17	66924083	Imputed	A	G	0.0597	1.001	0.2148	5.89E-06	Missense Variant	ABCA8
alanine	rs249932	16	23619669	Imputed	T	C	0.0587	0.9042	0.1945	5.90E-06	Intron Variant	PALB2
tyrosine	rs80134072	7	100344428	Genotyped	G	A	0.9727	1.2186	0.2622	5.90E-06	Intron Variant	ZAN
acetoacetate	rs11908225	20	52754251	Imputed	A	G	0.9808	1.3032	0.2795	5.91E-06	Intergenic	
methanol	rs117194206	7	30376381	Imputed	G	A	0.9899	2.3301	0.5016	5.94E-06	Intron Variant	ZNRF2
phenylalanine	rs77762405	4	102560900	Imputed	G	C	0.8927	0.7163	0.1542	5.95E-06	Intergenic	
methanol	rs45587437	22	24096464	Imputed	T	C	0.1154	0.6604	0.1422	5.96E-06	Intron Variant	VPREB3
alanine	rs35044959	3	127476878	Imputed	C	G	0.0324	1.1404	0.2456	6.01E-06	Intron Variant	MGLL
creatine	rs974680	21	27011112	Imputed	A	G	0.1498	0.5895	0.1269	6.02E-06	Intron Variant	JAM2
acetoacetate	rs2111657	18	28147571	Imputed	A	G	0.7389	0.5732	0.1231	6.05E-06	Intergenic	
phenylalanine	rs144330986	3	11032954	Imputed	A	G	0.0101	1.8695	0.4029	6.14E-06	2KB Upstream Variant	SLC6A1
lactate	rs12196202	6	139826787	Imputed	C	T	0.6437	0.4533	0.0977	6.18E-06	Intergenic	
myo-inositol	rs2021171	16	72110541	Imputed	A	G	0.0294	1.4502	0.3107	6.23E-06	Missense Variant, Intron Variant	HPR, TXNL4B
myo-inositol	rs1257176	2	134945197	Imputed	G	T	0.6164	0.5712	0.1226	6.44E-06	Intron Variant	MGAT5
pyruvate	rs62201701	20	46359257	Imputed	C	T	0.9818	1.5109	0.3259	6.47E-06	Intron Variant	SULF2
glycine	rs28510752	4	65306505	Imputed	C	T	0.5283	0.4048	0.0875	6.52E-06	Intergenic	

leucine	rs151068546	18	13863862	Imputed	C	T	0.9747	1.4137	0.3057	6.52E-06	Intergenic	
pyruvate	rs974680	21	27011112	Imputed	A	G	0.1498	0.6398	0.1381	6.53E-06	Intron Variant	JAM2
leucine	rs11547728	22	50720622	Imputed	C	T	0.5061	0.4208	0.091	6.56E-06	Missense Variant	PLXNB2
creatine	rs116391452	4	177358617	Imputed	G	A	0.914	0.8093	0.1751	6.59E-06	Intergenic	
myo-inositol	rs17374919	22	27792672	Imputed	T	C	0.9271	1.0764	0.2313	6.59E-06	Intergenic	
pyruvate	rs55704362	6	4040348	Imputed	C	G	0.0536	0.9894	0.2136	6.59E-06	Intron Variant	PRPF4B
acetate	rs11179207	12	72840057	Imputed	G	A	0.0749	1.0469	0.2259	6.60E-06	Intron Variant	TRHDE
phenylalanine	rs2007982	2	240510964	Imputed	C	A	0.3593	0.4589	0.0993	6.62E-06	Intergenic	
3-hydroxybutyrate	rs117318343	16	57987459	Genotyped	G	A	0.9565	1.1966	0.2567	6.63E-06	Intron Variant	CNGB1
leucine	rs75464738	14	23029263	Imputed	T	C	0.914	0.8862	0.1918	6.64E-06	500B Downstream Variant	LOC105370399
creatine	rs76177206	8	125220894	Imputed	C	T	0.9879	1.873	0.4054	6.66E-06	Intron Variant	LOC101927588
creatinine	rs12137496	1	39579804	Imputed	G	C	0.3188	0.4861	0.1052	6.71E-06	Intron Variant	MACF1
acetate	rs2459147	19	51766176	Imputed	G	A	0.5233	0.4338	0.0937	6.74E-06	Intron Variant	SIGLECL1, LOC107985327
acetoacetate	rs117574829	8	81322383	Genotyped	C	T	0.9818	1.8588	0.4012	6.74E-06	Intergenic	
glucose	rs75661686	2	209539017	Imputed	A	G	0.0172	1.5438	0.3343	6.74E-06	Intron Variant	LOC101927960
myo-inositol	rs6975104	7	151515746	Imputed	C	G	0.3411	0.4999	0.1075	6.75E-06	Intron Variant	PRKAG2
citrate	rs11762128	7	152855440	Imputed	C	T	0.9211	0.7875	0.17	6.81E-06	Intergenic	
phenylalanine	rs13230956	7	122669959	Imputed	G	A	0.6751	0.4482	0.0972	6.90E-06	Intergenic	
creatine	rs10132436	14	104012194	Imputed	A	C	0.7409	0.4886	0.106	6.97E-06	Intergenic	
methanol	rs72679950	1	111109257	Imputed	A	G	0.2217	0.4964	0.1077	6.98E-06	Intergenic	
citrate	rs116546166	3	139007820	Imputed	A	C	0.0364	1.2904	0.279	7.01E-06	Intergenic	
leucine	rs80134072	7	100344428	Genotyped	G	A	0.9727	1.2081	0.2622	7.04E-06	Intron Variant	ZAN
phenylalanine	rs41291728	3	50310922	Imputed	G	A	0.9595	0.9993	0.2169	7.04E-06	Intron Variant, 500B Downstream Variant	SEMA3B, MIR6872
glycerol	rs11762128	7	152855440	Imputed	C	T	0.9211	0.7796	0.1688	7.12E-06	Intergenic	

methanol	rs3902799	16	77813618	Imputed	C	T	0.501	0.4483	0.0974	7.16E-06	Intron Variant	LOC107984878
glycerol	rs79579331	10	22580283	Genotyped	A	C	0.9524	1.0625	0.2301	7.17E-06	Intergenic	
acetoacetate	rs146273627	1	216239981	Imputed	C	T	0.9686	1.1622	0.2518	7.24E-06	Intron Variant	USH2A
phenylalanine	rs143146888	10	57546882	Imputed	A	T	0.0587	0.8941	0.1944	7.31E-06	Intergenic	
lactate	rs2811170	1	98007575	Imputed	T	A	0.8785	0.7015	0.1525	7.35E-06	Intron Variant	DPYD
glycerol	rs72662371	1	54355804	Imputed	A	C	0.0233	1.4467	0.3137	7.37E-06	2KB Upstream Variant	YIPF1
formate	rs148204667	7	127594928	Imputed	A	G	0.0243	1.3028	0.2837	7.39E-06	Intron Variant	SND1, LOC105375492
creatine	rs62254082	3	69417585	Imputed	C	T	0.3856	0.4392	0.0956	7.42E-06	Intron Variant	FRMD4B
methanol	rs2386499	2	235477886	Imputed	C	T	0.8826	0.6778	0.1475	7.42E-06	Intergenic	
phenylalanine	rs117734263	15	42831221	Imputed	C	A	0.0132	1.864	0.4055	7.42E-06	Intron Variant	LRRC57
myo-inositol	rs72773649	10	12835227	Genotyped	T	G	0.0385	1.6197	0.3503	7.52E-06	Intron Variant	CAMK1D
acetoacetate	rs56327019	12	129458974	Genotyped	A	G	0.6974	0.4695	0.102	7.62E-06	Intron Variant	GLT1D1
lactate	rs13230956	7	122669959	Imputed	G	A	0.6751	0.4418	0.0963	7.63E-06	Intergenic	
phenylalanine	rs974680	21	27011112	Imputed	A	G	0.1498	0.5959	0.1299	7.74E-06	Intron Variant	JAM2
creatinine	rs62273573	3	125610065	Imputed	G	A	0.9393	0.9762	0.2128	7.80E-06	Intergenic	
citrate	rs42845	2	59109090	Imputed	C	G	0.8107	0.6078	0.1321	7.81E-06	Intron Variant	LINC01122
glucose	rs72919600	18	45894749	Imputed	C	T	0.1164	0.6331	0.1381	7.82E-06	Intron Variant	ZBTB7C
3-hydroxybutyrate	rs267920	5	10669532	Imputed	C	T	0.2085	0.6222	0.1346	7.86E-06	Intergenic	
3-hydroxybutyrate	rs62215596	20	52689292	Imputed	C	T	0.9474	0.9852	0.2132	7.86E-06	Intergenic	
acetoacetate	rs61849365	10	50867565	Imputed	A	G	0.2611	0.5065	0.1102	7.92E-06	Intron Variant	CHAT
myo-inositol	rs12963496	18	46255750	Genotyped	A	G	0.2166	0.5762	0.1249	7.92E-06	Intron Variant	CTIF
citrate	rs139125334	12	56055794	Imputed	C	T	0.1123	0.7611	0.1656	7.96E-06	Intergenic	
myo-inositol	rs430932	22	18902852	Imputed	C	T	0.0941	0.7651	0.166	7.96E-06	Intron Variant	PRODH

3-hydroxybutyrate	rs148948230	16	54239642	Imputed	C	T	0.9808	1.7721	0.3839	8.04E-06	Intergenic	
acetoacetate	rs61778763	1	36484246	Imputed	A	C	0.9271	0.8856	0.1929	8.06E-06	Intron Variant	AGO3, LOC105378647
myo-inositol	rs189343	16	26619479	Imputed	T	G	0.4099	0.5065	0.11	8.13E-06	Intergenic	
creatinine	rs4461451	3	185763219	Genotyped	A	G	0.1285	0.6327	0.1383	8.14E-06	Intergenic	
acetoacetate	rs10023768	4	11474624	Imputed	C	T	0.9211	0.8603	0.1875	8.18E-06	Intron Variant	LOC107986178
lactate	rs4527615	5	28652860	Genotyped	A	C	0.4241	0.4431	0.0969	8.18E-06	Intergenic	
pyruvate	rs28730582	4	100005318	Imputed	C	T	0.9747	1.5049	0.3285	8.20E-06	Intron Variant	ADH5
citrate	rs13206669	6	77946672	Imputed	G	A	0.1974	0.6015	0.1311	8.22E-06	Intron Variant	LOC101928570
pyruvate	rs2911458	16	88845009	Imputed	T	C	0.3877	0.4877	0.1065	8.22E-06	Intron Variant	PIEZO1
pyruvate	rs13059128	3	141171190	Imputed	G	A	0.6953	0.4915	0.1073	8.28E-06	Intergenic	
alanine	rs4282492	7	147217895	Imputed	T	A	0.7986	0.5356	0.1172	8.30E-06	Intron Variant	CNTNAP2
creatinine	rs6991598	8	52913147	Imputed	C	A	0.086	0.7401	0.1619	8.38E-06	Intergenic	
glycine	rs77569096	8	128468955	Imputed	G	A	0.1933	0.5394	0.1181	8.38E-06	Intron Variant	CASC8
tyrosine	rs2539982	2	63111004	Imputed	G	A	0.4767	0.4262	0.0933	8.39E-06	Intron Variant	EHBP1
glycine	rs71348715	2	136535410	Imputed	T	G	0.7642	0.5088	0.1114	8.41E-06	Intron Variant	UBXN4
methanol	rs9294454	6	90678652	Imputed	C	T	0.8421	0.5663	0.1241	8.47E-06	Intron Variant	BACH2
leucine	rs72974161	2	136802456	Imputed	C	T	0.9069	0.749	0.1641	8.49E-06	Intergenic	
methanol	rs141365824	15	47233723	Imputed	A	G	0.0182	1.3786	0.3021	8.50E-06	Intergenic	
acetone	rs12466549	2	192615315	Imputed	G	A	0.5962	0.4529	0.0992	8.53E-06	Intergenic	
tyrosine	rs77762405	4	102560900	Imputed	G	C	0.8927	0.7011	0.154	8.90E-06	Intergenic	
lactate	rs9557956	13	103579895	Imputed	G	A	0.7632	0.5286	0.1161	8.95E-06	Intergenic	
valine	rs9557956	13	103579895	Imputed	G	A	0.7632	0.5271	0.1159	9.05E-06	Intergenic	
acetoacetate	rs112588189	20	34494383	Imputed	A	G	0.9757	1.2214	0.2676	9.06E-06	Intron Variant	PHF20
pyruvate	rs17085104	4	65436020	Imputed	T	C	0.3877	0.4445	0.0975	9.06E-06	Intergenic	
tyrosine	rs2008168	7	147216870	Imputed	T	C	0.7783	0.5413	0.119	9.08E-06	Intron Variant	CNTNAP2

acetoacetate	rs147128865	9	34972766	Imputed	T	C	0.0142	2.0157	0.4417	9.10E-06	Intron Variant	PHF24
tyrosine	rs17190458	20	12602813	Imputed	A	T	0.0456	0.9895	0.2176	9.12E-06	Intergenic	
citrate	rs76341461	13	101521416	Genotyped	G	A	0.9423	0.9064	0.1987	9.25E-06	Intron Variant	NALCN-AS1
lactate	rs4517336	1	239492387	Imputed	C	A	0.2713	0.4765	0.1049	9.38E-06	Intergenic	
phenylalanine	rs28730582	4	100005318	Imputed	C	T	0.9747	1.436	0.3161	9.38E-06	Intron Variant	ADH5
phenylalanine	rs138621393	3	51420328	Imputed	T	C	0.9626	1.0875	0.2395	9.43E-06	3 Prime UTR Variant	DOCK3
acetone	rs258829	5	11386127	Genotyped	C	T	0.0982	0.8108	0.1786	9.52E-06	Intron Variant	CTNND2
methanol	rs4078223	7	65359	Imputed	T	C	0.9595	1.0973	0.2419	9.52E-06	Intergenic	
glycerol	rs4521561	6	164762249	Imputed	A	G	0.6883	0.4782	0.1051	9.53E-06	Intergenic	
glucose	rs1811248	7	28421036	Imputed	G	T	0.3553	0.4404	0.0971	9.59E-06	Intron Variant	CREB5
tyrosine	rs150959290	1	111619569	Imputed	G	A	0.9585	0.9936	0.2191	9.60E-06	Intergenic	
myo-inositol	rs72779777	2	6982227	Genotyped	T	C	0.0202	1.6734	0.3665	9.63E-06	Intron Variant, 2KB Upstream Variant	CMPK2, NRIR
glycerol	rs12464454	2	15231280	Imputed	A	G	0.2763	0.5039	0.1108	9.65E-06	Intron Variant	NBAS
acetate	rs186358932	14	74456480	Imputed	G	A	0.9727	1.3231	0.2912	9.74E-06	Intron Variant	ENTPD5
creatine	rs56274812	1	165239473	Imputed	G	T	0.3543	0.4526	0.0999	9.79E-06	Intron Variant	LMX1A
creatine	rs10830080	10	129263045	Imputed	C	T	0.4737	0.4202	0.0927	9.83E-06	Intergenic	
acetone	rs41540212	21	37442727	Imputed	T	C	0.0192	1.8354	0.405	9.88E-06	Intron Variant, Non Coding Transcript Variant	CBR1, LOC100133286
pyruvate	rs117397249	7	35687894	Imputed	A	G	0.0283	1.2164	0.2681	9.88E-06	Intron Variant	HERPUD2
alanine	rs12194562	6	146520360	Genotyped	T	C	0.9828	1.825	0.403	9.91E-06	Intron Variant	GRM1
citrate	rs2015402	1	203183825	Imputed	G	A	0.8745	0.7619	0.1677	9.92E-06	Intergenic	
glucose	rs188922919	13	113070751	Imputed	C	A	0.9818	1.5071	0.3329	9.98E-06	Intron Variant	SPACA7, LOC105370372
glycerol	rs2441739	10	68249299	Imputed	G	A	0.5111	0.4199	0.0925	9.98E-06	Intron Variant	CTNNA3
acetate	rs13132463	4	40249406	Imputed	T	A	0.9737	1.5974	0.352	9.99E-06	Intergenic	

Supplementary Table S6. Look-up of genome-wide significant variants in a previously published GWAS of the entire ADRENAL cohort. Sepsis outcomes (28- and 90-day mortality, APACHE, and log creatinine) GWAS were performed in ADRENAL-GEPS cohort. Susceptibility to septic shock GWAS was a case-control analyses that included the ADRENAL-GEPS cohort and a cohort of controls. A1 is the effect allele. N is the sample size, number of participants included in GWAS.

Metabolite	Phenotype	CHR	SNP	BP	A1	N	BETA	STAT	SE	CI	P	OR
3-hydroxybutyrate	28-day mortality	10	rs2456680	68255097	G	493	-0.2297	-1.284	0.1789	[-0.58, 0.12]	0.1992	0.7948
3-hydroxybutyrate	90-day mortality	10	rs2456680	68255097	G	493	0.6673	1.932	0.3454	[-0.01, 1.34]	0.08014	1.949
3-hydroxybutyrate	APACHE	10	rs2456680	68255097	G	492	0.1567	0.3478	0.4505	[-0.73, 1.04]	0.7282	
3-hydroxybutyrate	Dialysis	10	rs2456680	68255097	G	493	-0.4986	-0.8794	0.5669	[-1.61, 0.61]	0.3792	0.6074
3-hydroxybutyrate	Renal replacement therapy post randomisation	10	rs2456680	68255097	G	491	-0.0156	-0.1063	0.1470	[-0.30, 0.27]	0.9153	0.9845
acetoacetate	28-day mortality	4	rs2213037	100160177	T	493	-0.1896	-0.359	0.5281	[-1.22, 0.85]	0.7196	0.8273
acetoacetate	90-day mortality	4	rs2213037	100160177	T	493	-0.4589	-0.8751	0.5244	[-1.49, 0.57]	0.3815	0.632
acetoacetate	APACHE	4	rs2213037	100160177	T	492	1.6640	1.241	1.3409	[-0.96, 4.29]	0.2151	
acetoacetate	Renal replacement therapy post randomisation	4	rs2213037	100160177	T	491	0.6931	1.488	0.4658	[-0.22, 1.61]	0.09145	2
acetoacetate	Susceptibility to septic shock	4	rs2213037	100160177	T	8432	0.0129	0.06491	0.1990	[-0.38, 0.40]	0.9482	1.013
creatinine	28-day mortality	4	rs6851961	65351771	G	493	0.0227	0.1292	0.1760	[-0.32, 0.37]	0.8972	1.023
creatinine	90-day mortality	4	rs6851961	65351771	G	493	0.0862	0.5342	0.1613	[-0.23, 0.40]	0.5932	1.09
creatinine	APACHE	4	rs6851961	65351771	G	492	0.2993	0.6643	0.4505	[-0.58, 1.18]	0.5068	
creatinine	Dialysis	4	rs6851961	65351771	G	493	0.4253	0.7888	0.5391	[-0.63,1.48]	0.4302	1.53
creatininte	Renal replacement therapy post randomisation	4	rs6851961	65351771	G	491	-0.0845	-0.5691	0.5391	[-0.38, 0.21]	0.5693	0.919
creatinine	log creatinine	4	rs6851961	65351771	G	492	0.0199	0.4812	0.0413	[-0.06, 0.10]	0.6306	
creatinine	Susceptibility to septic shock	4	rs6851961	65351771	G	8510	-0.0323	-0.4845	0.0667	[-0.16, 0.10]	0.628	0.9682

***** lead SNP for 3-hydroxybutyrate was not present in QIMR controls.

Supplementary Table S7. Look-up of genome-wide significant variants in a previously published GWAS for metabolites which reported significant hits in the current study (3-hydroxybutyrate, acetoacetate, creatinine). For full reference refer to Supplementary Table S7. NR means value was not reported in the GWAS catalogue.

Metabolite	SNP	Replication Study	EA GWAS Cat.	p-value GWAS Cat.	Beta GWAS Cat.	CI GWAS Cat.	mapped Gene GWAS Cat.	EA	Beta	SE	p-value
3-hydroxybutyrate	rs9896573	Demirkan et al. (2015)	NR	1.65 x 10-8	NR	NR	KCNJ2-AS1, KCNJ16	C	-0.2195	0.1614	0.1758
3-hydroxybutyrate	rs769449	Li-Gao et al. (2021)	A	7 x 10-9	0.176858 mmol/l increase	[0.12-0.24]	APOE	A	-0.0125	0.1969	0.9494
3-hydroxybutyrate	rs9930957	Richardson et al. (2022)	C	5 x 10-29	0.0624432 unit decrease	[0.051-0.073]	PMFBP1	T	0.1059	0.1579	0.5033
3-hydroxybutyrate	rs117643180	Richardson et al. (2022)	C	2 x 10-10	0.0823219 unit increase	[0.057-0.108]	SLC2A4	A	0.5528	0.4652	0.2365
3-hydroxybutyrate	rs429358	Richardson et al. (2022)	T	2 x 10-23	0.0564519 unit decrease	[0.045-0.068]	APOE	C	0.0617	0.1631	0.7056
3-hydroxybutyrate	rs12976395	Richardson et al. (2022)	G	2 x 10-8	0.0247054 unit increase	[0.016-0.033]	APOC4, APOC1P1	NR	NR	NR	NR
3-hydroxybutyrate	rs2642439	Richardson et al. (2022)	A	2 x 10-8	0.0248664 unit increase	[0.016-0.034]	MTARC1	A	-0.1489	0.1260	0.2391
3-hydroxybutyrate	rs10127775	Richardson et al. (2022)	A	2 x 10-13	0.0309459 unit increase	[0.023-0.039]	GALNT2	A	0.1297	0.1096	0.2383
3-hydroxybutyrate	rs585188	Richardson et al. (2022)	G	9 x 10-21	0.0439476 unit increase	[0.035-0.053]	PLCXD3, OXCT1	A	0.0200	0.1238	0.8719
3-hydroxybutyrate	rs9987289	Richardson et al. (2022)	A	1 x 10-19	0.0648127 unit decrease	[0.051-0.079]	RNU6-526P, RNU6-1151P	A	0.1280	0.2058	0.5349
3-hydroxybutyrate	rs7831557	Richardson et al. (2022)	G	2 x 10-11	0.0274428 unit decrease	[0.019-0.035]	MSRA	G	0.1429	0.1093	0.1931
3-hydroxybutyrate	rs2645430	Richardson et al. (2022)	A	7 x 10-14	0.0312104 unit increase	[0.023-0.039]	FDFT1	A	-0.1440	0.1105	0.1946
3-hydroxybutyrate	rs7873387	Richardson et al. (2022)	A	5 x 10-8	0.0342812 unit decrease	[0.022-0.047]	ABCA1	C	-0.1689	0.1750	0.3360
3-hydroxybutyrate	rs2575876	Richardson et al. (2022)	G	1 x 10-11	0.0319159 unit increase	[0.023-0.041]	ABCA1	A	-0.0501	0.1181	0.6721
3-hydroxybutyrate	rs2419604	Richardson et al. (2022)	A	3 x 10-19	0.0410568 unit decrease	[0.032-0.05]	GPAM	A	0.0962	0.1282	0.4542

3-hydroxybutyrate	rs4520	Richardson et al. (2022)	T	8 x 10-16	0.0387186 unit increase	[0.029-0.048]	APOC3	T	0.0491	0.1246	0.6942
3-hydroxybutyrate	rs7953249	Richardson et al. (2022)	G	4 x 10-9	0.0244662 unit decrease	[0.016-0.033]	HNF1A-AS1	G	-0.0319	0.1172	0.7857
3-hydroxybutyrate	rs12314700	Richardson et al. (2022)	A	1 x 10-10	0.0339249 unit increase	[0.024-0.044]	BCL7A	T	-0.2539	0.1404	0.0725
3-hydroxybutyrate	rs145730801	Richardson et al. (2022)	T	2 x 10-10	0.0643177 unit increase	[0.044-0.084]	SERPINA10, SERPINA6	NR	NR	NR	NR
3-hydroxybutyrate	rs28929474	Richardson et al. (2022)	C	1 x 10-27	0.159726 unit increase	[0.13-0.19]	SERPINA1	T	-0.3460	0.3512	0.3260
3-hydroxybutyrate	rs35853021	Richardson et al. (2022)	G	2 x 10-12	0.0302559 unit increase	[0.022-0.039]	ALDH1A2	T	-0.1476	0.1255	0.2415
3-hydroxybutyrate	rs588136	Richardson et al. (2022)	C	4 x 10-11	0.0331961 unit decrease	[0.023-0.043]	ALDH1A2, LIPC, LIPC-AS1	C	-0.1586	0.1393	0.2567
3-hydroxybutyrate	rs4520	Smith et al. (2022)	T	8 x 10-13	0.0290618 unit increase	[0.021-0.037]	APOC3	T	0.0491	0.1246	0.6942
3-hydroxybutyrate	rs73228032	Smith et al. (2022)	C	2 x 10-11	0.0332297 unit increase	[0.024-0.043]	HIP1R	A	-0.3005	0.1746	0.0872
3-hydroxybutyrate	rs7149605	Smith et al. (2022)	G	2 x 10-08	0.0336823 unit increase	[0.022-0.045]	SERPINA1	A	-0.0712	0.1724	0.6802
3-hydroxybutyrate	rs926144	Smith et al. (2022)	A	3 x 10-08	0.0232323 unit increase	[0.015-0.031]	-	G	-0.1640	0.1418	0.2492
3-hydroxybutyrate	rs35853021	Smith et al. (2022)	G	1 x 10-10	0.0231899 unit increase	[0.016-0.03]	-	T	-0.1476	0.1255	0.2415
3-hydroxybutyrate	rs588136	Smith et al. (2022)	C	5 x 10-09	0.0247645 unit decrease	[0.033-0.016]	ALDH1A2, LIPC, LIPC-AS1	C	-0.1586	0.1393	0.2567
3-hydroxybutyrate	rs35909200	Smith et al. (2022)	T	5 x 10-19	0.0421709 unit decrease	[0.051-0.033]	PMFBP1	G	0.1193	0.1580	0.4514
3-hydroxybutyrate	rs429358	Smith et al. (2022)	T	1 x 10-19	0.0431112 unit decrease	[0.052-0.034]	APOE	C	0.0617	0.1631	0.7056
3-hydroxybutyrate	rs617279	Smith et al. (2022)	A	2 x 10-15	0.0315533 unit increase	[0.024-0.039]	-	T	0.0200	0.1238	0.8719
3-hydroxybutyrate	rs9987289	Smith et al. (2022)	A	2 x 10-18	0.0525807 unit decrease	[0.064-0.041]	LOC157273	A	0.1280	0.2058	0.5349
3-hydroxybutyrate	rs2645430	Smith et al. (2022)	A	5 x 10-12	0.0242544 unit increase	[0.017-0.031]	FDFT1, LOC105379243	A	-0.1440	0.1105	0.1946
3-hydroxybutyrate	rs7814795	Smith et al. (2022)	C	9 x 10-10	0.0213567 unit decrease	[0.028-0.015]	-	C	0.1261	0.1115	0.2595
3-hydroxybutyrate	rs13284054	Smith et al. (2022)	T	5 x 10-10	0.0329786 unit increase	[0.023-0.043]	ABCA1	C	-0.1743	0.1601	0.2781

acetoacetate	rs2255400	Richardson et al. (2022)	A	4 x 10-9	0.0270253 unit decrease	[0.018-0.036]	GPAM	A	0.0983	0.1126	0.3838
acetoacetate	rs964184	Richardson et al. (2022)	G	5 x 10-26	0.0637363 unit increase	[0.052-0.076]	ZPR1	G	0.1887	0.1568	0.2303
acetoacetate	rs144305620	Richardson et al. (2022)	G	2 x 10-13	0.0382775 unit increase	[0.028-0.048]	MLXIP	A	-0.0964	0.1257	0.4441
acetoacetate	rs4846915	Richardson et al. (2022)	C	8 x 10-9	0.0333683 unit increase	[0.022-0.045]	GALNT2	C	0.2012	0.1469	0.1725
acetoacetate	rs11745373	Richardson et al. (2022)	T	2 x 10-28	0.0520298 unit increase	[0.043-0.061]	OXCT1	A	0.0112	0.1157	0.9229
acetoacetate	rs150515955	Richardson et al. (2022)	C	3 x 10-20	0.110897 unit increase	[0.087-0.134]	SFT2D1, MPC1	T	-0.1532	0.2597	0.5558
acetoacetate	rs199922514	Richardson et al. (2022)	A	5 x 10-11	0.0469937 unit decrease	[0.033-0.061]	RNU6-526P, RNU6-1151P	NR	NR	NR	NR
acetoacetate	rs144305620	Smith et al. (2022)	G	2 x 10-08	0.0268138 unit increase	[0.018-0.036]	MLXIP	A	-0.0964	0.1257	0.4441
acetoacetate	rs617174	Smith et al. (2022)	C	2 x 10-20	0.0399854 unit increase	[0.032-0.048]	-	G	0.0112	0.1157	0.9229
acetoacetate	rs2126259	Smith et al. (2022)	T	4 x 10-10	0.0387327 unit decrease	[0.051-0.027]	LOC157273	T	-0.0095	0.1864	0.9592
creatinine	rs111714445	Sinnott-Armstrong et al. (2021)	T	2 x 10-21	0.0709 unit decrease	[0.056-0.086]	TDRD12	T	-1.0178	0.2933	0.0006
creatinine	rs715	Kanai et al. (2018)	NR	2 x 10-12	0.03693 unit increase	[0.027-0.047]	CPS1	C	-0.3204	0.1040	0.0023
creatinine	rs115777572	Sinnott-Armstrong et al. (2021)	C	2 x 10-10	0.0408 unit decrease	[0.028-0.053]	FAM47E-STBD1, FAM47E	C	-0.7280	0.2362	0.0023
creatinine	rs2216405	Sinnott-Armstrong et al. (2021)	G	2 x 10-38	0.0407 unit increase	[0.035-0.047]	CPS1	G	-0.4009	0.1355	0.0034
creatinine	rs2216405	Sinnott-Armstrong et al. (2021)	G	3 x 10-9	0.019 unit increase	[0.013-0.025]	CPS1	G	-0.4009	0.1355	0.0034
creatinine	rs1705694	Kanai et al. (2018)	NR	9 x 10-12	0.03389 unit decrease	[0.024-0.044]	STC1	G	-0.2424	0.0934	0.0101
creatinine	rs1106766	Pattaro et al. (2016)	T	2 x 10-9	0.0061 unit increase	[0.0041-0.0081]	R3HDM2	T	-0.2907	0.1196	0.0160
creatinine	rs3741414	Gorski et al. (2017)	NR	2 x 10-7	NR	NR	INHBC	T	-0.2907	0.1196	0.0160
creatinine	rs10794486	Kanai et al. (2018)	NR	3 x 10-13	0.02708 unit decrease	[0.02-0.034]	IGF1R	G	0.2714	0.1129	0.0171
creatinine	rs515639	Sinnott-Armstrong et al. (2021)	T	1 x 10-14	0.0277 unit decrease	[0.021-0.035]	SLC6A13	T	-0.3232	0.1358	0.0182

creatinine	rs10087788	Sinnott-Armstrong et al. (2021)	A	5 x 10-11	0.0182 unit increase	[0.013-0.024]	CPNE3	A	-0.2627	0.1115	0.0194
creatinine	rs1047891	Graham et al. (2019)	A	3 x 10-14	0.051092 unit increase	[0.039-0.063]	CPS1	A	-0.2476	0.1055	0.0199
creatinine	rs1047891	Gorski et al. (2017)	A	2 x 10-16	0.0089 unit decrease	[0.0069-0.0109]	CPS1	A	-0.2476	0.1055	0.0199
creatinine	rs10786068	Sinnott-Armstrong et al. (2021)	G	5 x 10-9	0.0151 unit increase	[0.01-0.02]	NIP7P1, CYP26A1	G	-0.2359	0.1068	0.0284
creatinine	rs1111571	Gorski et al. (2017)	A	6 x 10-9	0.0061 unit increase	[0.0039-0.0083]	PRMT7	A	0.2493	0.1135	0.0292
creatinine	rs227702	Sinnott-Armstrong et al. (2021)	G	2 x 10-9	0.016 unit increase	[0.011-0.021]	C17orf67	G	-0.2483	0.1132	0.0294
creatinine	rs35958131	Sinnott-Armstrong et al. (2021)	A	1 x 10-13	0.0326 unit decrease	[0.024-0.041]	RERG	A	0.3823	0.1764	0.0314
creatinine	rs12599531	Sinnott-Armstrong et al. (2021)	C	1 x 10-13	0.0184 unit decrease	[0.014-0.023]	SPIRE2	C	0.2183	0.1007	0.0314
creatinine	rs8056893	Pattaro et al. (2016)	A	1 x 10-7	0.0047 unit increase	[0.0029-0.0065]	SLC7A6	A	0.2470	0.1157	0.0339
creatinine	rs117820381	Sinnott-Armstrong et al. (2021)	A	4 x 10-10	0.0497 unit decrease	[0.034-0.065]	TNRC6B, ADSL	A	0.7679	0.3625	0.0353
creatinine	rs228611	Pattaro et al. (2016)	A	4 x 10-12	0.0056 unit decrease	[0.004-0.0072]	MANBA	A	0.1984	0.0942	0.0364
creatinine	rs6927469	Rhee et al. (2013)	NR	3 x 10-6	0.1935785 unit decrease	[0.11-0.27]	F13A1	G	-0.2421	0.1160	0.0381
creatinine	rs10856780	Sinnott-Armstrong et al. (2021)	C	2 x 10-15	0.0194 unit decrease	[0.015-0.024]	RDH14	C	0.2117	0.1029	0.0410
creatinine	rs7223401	Sinnott-Armstrong et al. (2021)	G	2 x 10-26	0.0341 unit decrease	[0.028-0.04]	BCAS3	G	-0.2568	0.1265	0.0436
creatinine	rs12975033	Pattaro et al. (2016)	A	1 x 10-6	0.0039 unit decrease	[0.0023-0.0055]	IZUMO1	A	0.2024	0.1006	0.0456
creatinine	rs17037804	Sinnott-Armstrong et al. (2021)	G	1 x 10-12	0.0196 unit decrease	[0.014-0.025]	EXOG	G	-0.2317	0.1160	0.0470
creatinine	rs73048979	Sinnott-Armstrong et al. (2021)	T	3 x 10-20	0.0681 unit increase	[0.054-0.083]	TSPAN9	T	0.4917	0.2475	0.0483
creatinine	rs111366116	Gorski et al. (2017)	T	6 x 10-10	0.0094 unit increase	[0.0065-0.0123]	ARL¬†15.00	T	-0.3084	0.1592	0.0541
creatinine	rs7735249	Pattaro et al. (2016)	C	2 x 10-7	0.0079 unit decrease	[0.005-0.0108]	ARL¬†15.00	G	-0.3084	0.1592	0.0541
creatinine	rs4848700	Sinnott-Armstrong et al. (2021)	C	4 x 10-10	0.0172 unit decrease	[0.012-0.022]	TFCP2L1	C	-0.2089	0.1083	0.0550

creatinine	rs2802729	Pattaro et al. (2016)	A	2 x 10-8	0.0046 unit decrease	[0.003-0.0062]	SDCCAG8	A	-0.1944	0.1010	0.0556
creatinine	rs73670554	Sinnott-Armstrong et al. (2021)	T	1 x 10-10	0.0277 unit decrease	[0.019-0.036]	UNCX	T	-0.4016	0.2088	0.0558
creatinine	rs62436674	Sinnott-Armstrong et al. (2021)	T	1 x 10-21	0.03 unit decrease	[0.024-0.036]	UNCX	T	-0.3025	0.1590	0.0586
creatinine	rs16972495	Kanai et al. (2018)	NR	2 x 10-8	0.02353 unit decrease	[0.015-0.032]	CEMIP	C	0.2534	0.1350	0.0620
creatinine	rs16972495	Sinnott-Armstrong et al. (2021)	C	5 x 10-10	0.0192 unit decrease	[0.013-0.025]	CEMIP	C	0.2534	0.1350	0.0620
creatinine	rs2297372	Sinnott-Armstrong et al. (2021)	C	1 x 10-9	0.016 unit increase	[0.011-0.021]	IGF2R	C	-0.2011	0.1076	0.0630
creatinine	rs6801044	Williams et al. (2015)	NR	4 x 10-6	NR	NR	RN7SL73P, APOD	A	0.2159	0.1165	0.0653
creatinine	rs7703225	Sinnott-Armstrong et al. (2021)	A	2 x 10-14	0.0266 unit increase	[0.02-0.033]	FGFR4, NSD1	A	0.2770	0.1498	0.0660
creatinine	rs35104165	Sinnott-Armstrong et al. (2021)	C	1 x 10-13	0.0453 unit increase	[0.033-0.057]	GSDMB	C	0.3942	0.2134	0.0661
creatinine	rs6935129	Kanai et al. (2018)	NR	1 x 10-8	0.0216 unit decrease	[0.014-0.029]	RPS10-NUDT3	A	0.5027	0.2741	0.0680
creatinine	rs4744712	Pattaro et al. (2016)	A	7 x 10-15	0.0072 unit decrease	[0.0054-0.009]	PIP5K1B	A	0.1751	0.0957	0.0688
creatinine	rs4744712	Pattaro et al. (2016)	A	4 x 10-15	0.0071 unit decrease	[0.0053-0.0089]	PIP5K1B	A	0.1751	0.0957	0.0688
creatinine	rs4744712	Köttgen et al. (2010)	A	8 x 10-14	0.01 unit decrease	[0.008-0.016]	PIP5K1B	A	0.1751	0.0957	0.0688
creatinine	rs12654812	Sinnott-Armstrong et al. (2021)	A	7 x 10-40	0.0331 unit increase	[0.028-0.038]	RGS14	A	0.1691	0.0933	0.0715
creatinine	rs11956816	Sinnott-Armstrong et al. (2021)	T	6 x 10-10	0.0343 unit increase	[0.024-0.045]	DAB2	T	-0.4012	0.2227	0.0731
creatinine	rs35654350	Sinnott-Armstrong et al. (2021)	C	6 x 10-11	0.0209 unit increase	[0.015-0.027]	TDRD12	C	0.2308	0.1289	0.0750
creatinine	rs7535253	Sinnott-Armstrong et al. (2021)	C	9 x 10-11	0.019 unit increase	[0.013-0.025]	PTPN14, CENPF	T	0.2122	0.1192	0.0765
creatinine	rs6041422	Rhee et al. (2013)	NR	8 x 10-6	0.23383853 unit decrease	[0.13-0.34]	'-	G	-0.2509	0.1419	0.0785
creatinine	rs2125739	Sinnott-Armstrong et al. (2021)	C	4 x 10-9	0.016 unit increase	[0.011-0.021]	ABCC10	C	-0.2042	0.1155	0.0786
creatinine	rs7956634	Pattaro et al. (2016)	T	7 x 10-12	0.0068 unit decrease	[0.0048-0.0088]	RERG	C	0.2010	0.1144	0.0805

creatinine	rs12124078	Pattaro et al. (2016)	A	5 x 10-9	0.0058 unit increase	[0.0038-0.0078]	DNAJC16	G	0.1814	0.1034	0.0810
creatinine	rs1800615	Pattaro et al. (2016)	T	2 x 10-9	0.0058 unit decrease	[0.004-0.0076]	CASP9	T	0.1814	0.1034	0.0810
creatinine	rs7515244	Sinnott-Armstrong et al. (2021)	G	3 x 10-16	0.0209 unit increase	[0.016-0.026]	DNAJC16	G	0.1814	0.1034	0.0810
creatinine	rs7546668	Gorski et al. (2017)	C	1 x 10-9	0.0063 unit decrease	[0.0043-0.0083]	DNAJC16	C	0.1814	0.1034	0.0810
creatinine	rs10746942	Gorski et al. (2017)	A	4 x 10-18	0.0086 unit increase	[0.0068-0.0104]	PIP5K1B	G	0.1716	0.0990	0.0844
creatinine	rs12826808	Gorski et al. (2017)	NR	1 x 10-7	NR	NR	RERG	T	0.1981	0.1144	0.0848
creatinine	rs79639185	Sinnott-Armstrong et al. (2021)	A	5 x 10-10	0.0431 unit increase	[0.03-0.057]	'-	A	-0.5024	0.2902	0.0849
creatinine	rs3812036	Nagy et al. (2017)	T	1 x 10-10	0.09276888 mg/dl increase	[0.065-0.121]	SLC34A1	T	0.1805	0.1049	0.0866
creatinine	rs3812036	Gorski et al. (2017)	T	9 x 10-19	0.0102 unit decrease	[0.008-0.0124]	SLC34A1	T	0.1805	0.1049	0.0866
creatinine	rs3812036	Kanai et al. (2018)	NR	7 x 10-17	0.03549 unit increase	[0.027-0.044]	SLC34A1	T	0.1805	0.1049	0.0866
creatinine	rs11812460	Sinnott-Armstrong et al. (2021)	A	4 x 10-11	0.018 unit increase	[0.013-0.023]	CYP26A1, CYP26C1	A	-0.1808	0.1072	0.0933
creatinine	rs132653	Sinnott-Armstrong et al. (2021)	T	1 x 10-9	0.0188 unit decrease	[0.013-0.025]	APOL3	G	0.2098	0.1249	0.0945
creatinine	rs11123169	Kanai et al. (2018)	NR	5 x 10-14	0.03103 unit decrease	[0.023-0.039]	PSD4, PAX8-AS1	C	0.1693	0.1014	0.0965
creatinine	rs56142049	Sinnott-Armstrong et al. (2021)	G	5 x 10-9	0.025 unit decrease	[0.017-0.033]	TNP1, FABP5P14	G	-0.3143	0.1905	0.1005
creatinine	rs1016988	Sinnott-Armstrong et al. (2021)	C	2 x 10-11	0.0202 unit decrease	[0.014-0.026]	SLC22A5, IRF1-AS1	C	0.1899	0.1168	0.1056
creatinine	rs4667594	Pattaro et al. (2016)	A	4 x 10-8	0.0044 unit decrease	[0.0028-0.006]	LRP2	T	-0.1569	0.0971	0.1076
creatinine	rs6431731	Pattaro et al. (2016)	T	5 x 10-7	0.0124 unit decrease	[0.0075-0.0173]	LINC01804	C	-0.3368	0.2085	0.1077
creatinine	rs72704117	Sinnott-Armstrong et al. (2021)	T	1 x 10-11	0.0542 unit increase	[0.039-0.07]	THBS3-AS1, THBS3	T	-0.4704	0.2914	0.1080
creatinine	rs116014524	Sinnott-Armstrong et al. (2021)	T	4 x 10-10	0.0319 unit increase	[0.022-0.042]	NFATC1	T	0.3477	0.2156	0.1083
creatinine	rs10857147	Kanai et al. (2018)	NR	2 x 10-16	0.03533 unit decrease	[0.027-0.044]	PRDM8, FGF5	T	-0.1685	0.1048	0.1095

creatinine	rs164748	Pattaro et al. (2016)	C	2 x 10-8	0.0046 unit increase	[NR]	CHMP1A	G	-0.1617	0.1011	0.1111
creatinine	rs34175245	Sinnott-Armstrong et al. (2021)	G	4 x 10-12	0.0297 unit decrease	[0.021-0.038]	ARID1A, RNU7-29P	G	-0.2802	0.1756	0.1121
creatinine	rs76275337	Sinnott-Armstrong et al. (2021)	A	2 x 10-26	0.038 unit increase	[0.031-0.045]	DUOX1	A	-0.2195	0.1383	0.1139
creatinine	rs12160926	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0255 unit decrease	[0.017-0.034]	SHISA8	A	0.2739	0.1725	0.1140
creatinine	rs9887921	Sinnott-Armstrong et al. (2021)	T	6 x 10-12	0.0314 unit decrease	[0.022-0.04]	TCEA3, ZNF436-AS1	T	0.3098	0.1954	0.1143
creatinine	rs11655024	Kanai et al. (2018)	NR	5 x 10-9	0.03128 unit decrease	[0.021-0.042]	BCAS3	T	-0.1866	0.1184	0.1166
creatinine	rs6127099	Gorski et al. (2017)	A	3 x 10-17	0.0095 unit decrease	[0.0073-0.0117]	CYP24A1, BCAS1	T	0.1659	0.1060	0.1191
creatinine	rs6122466	Sinnott-Armstrong et al. (2021)	G	7 x 10-14	0.0255 unit increase	[0.019-0.032]	EEF1A2, PPDPF	G	0.2361	0.1538	0.1263
creatinine	rs12190287	Sinnott-Armstrong et al. (2021)	G	2 x 10-13	0.0182 unit increase	[0.013-0.023]	TCF21	G	0.1521	0.1001	0.1301
creatinine	rs60865276	Sinnott-Armstrong et al. (2021)	T	2 x 10-13	0.0184 unit decrease	[0.014-0.023]	GNAS	T	0.1488	0.0986	0.1327
creatinine	rs72778130	Sinnott-Armstrong et al. (2021)	A	1 x 10-11	0.0203 unit increase	[0.014-0.026]	CLUAP1	A	0.1884	0.1252	0.1338
creatinine	rs11706153	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0488 unit decrease	[0.033-0.065]	CELSR3	T	0.6246	0.4187	0.1373
creatinine	rs12207489	Rhee et al. (2013)	NR	9 x 10-6	0.15618896 unit decrease	[0.087-0.225]	USP45	A	-0.1539	0.1056	0.1463
creatinine	rs67332916	Kanai et al. (2018)	NR	1 x 10-11	0.02647 unit decrease	[0.019-0.034]	DGKH	T	0.2179	0.1495	0.1464
creatinine	rs7212715	Kanai et al. (2018)	NR	9 x 10-13	0.03478 unit increase	[0.025-0.044]	CDK12, MED1	C	-0.1647	0.1132	0.1474
creatinine	rs187355703	Sinnott-Armstrong et al. (2021)	G	2 x 10-31	0.0938 unit increase	[0.078-0.109]	HOXD-AS2	G	-0.3905	0.2731	0.1542
creatinine	rs187355703	Gorski et al. (2017)	C	5 x 10-10	0.0182 unit increase	[0.012-0.024]	HOXD-AS2	G	-0.3905	0.2731	0.1542
creatinine	rs863678	Graham et al. (2019)	T	1 x 10-8	0.036512 unit increase	[0.025-0.048]	HOXD10, HOXD11	G	0.1508	0.1060	0.1564
creatinine	rs4774940	Sinnott-Armstrong et al. (2021)	C	1 x 10-10	0.0164 unit decrease	[0.011-0.021]	CGNL1	C	-0.1452	0.1026	0.1586
creatinine	rs2472297	Sinnott-Armstrong et al. (2021)	T	5 x 10-34	0.0332 unit decrease	[0.028-0.038]	CYP1A2, CYP1A1	T	0.1616	0.1144	0.1594

creatinine	rs2472297	Sinnott-Armstrong et al. (2021)	T	4 x 10-26	0.0293 unit decrease	[0.024-0.035]	CYP1A2, CYP1A1	T	0.1616	0.1144	0.1594
creatinine	rs17742573	Sinnott-Armstrong et al. (2021)	G	2 x 10-10	0.0289 unit increase	[0.02-0.038]	ACVR2A	G	-0.3230	0.2291	0.1600
creatinine	rs74576293	Sinnott-Armstrong et al. (2021)	C	1 x 10-14	0.0323 unit increase	[0.024-0.041]	TSPAN9	C	0.2162	0.1536	0.1607
creatinine	rs2994979	Rhee et al. (2013)	NR	2 x 10-6	0.1585385 unit decrease	[0.093-0.224]	FH, RPS6KA1	C	-0.1424	0.1014	0.1616
creatinine	rs10206899	Chambers et al. (2010)	G	1 x 10-9	1 % decrease	[0.7-1.2]	ALMS1P1	C	-0.1631	0.1162	0.1617
creatinine	rs13538	Köttgen et al. (2010)	G	5 x 10-14	0.01 unit increase	[0.005-0.013]	NAT8, ALMS1P1	G	-0.1631	0.1162	0.1617
creatinine	rs13538	Pattaro et al. (2016)	A	3 x 10-16	0.0092 unit decrease	[0.007-0.0114]	NAT8, ALMS1P1	G	-0.1631	0.1162	0.1617
creatinine	rs6546838	Pattaro et al. (2016)	A	8 x 10-20	0.0093 unit decrease	[0.0073-0.0113]	ALMS1	G	-0.1633	0.1163	0.1617
creatinine	rs6060278	Sinnott-Armstrong et al. (2021)	C	2 x 10-14	0.0222 unit increase	[0.017-0.028]	PROCR, EDEM2	C	0.1607	0.1146	0.1622
creatinine	rs11722932	Sinnott-Armstrong et al. (2021)	C	5 x 10-9	0.0176 unit decrease	[0.012-0.023]	SHISA3	C	0.1751	0.1249	0.1623
creatinine	rs34783010	Sinnott-Armstrong et al. (2021)	T	7 x 10-10	0.0186 unit increase	[0.013-0.024]	GIPR	T	-0.1744	0.1245	0.1627
creatinine	rs6492982	Gorski et al. (2017)	NR	2 x 10-6	NR	NR	INO80	C	-0.1376	0.0991	0.1665
creatinine	rs12483377	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0251 unit increase	[0.017-0.033]	SLC19A1, COL18A1	A	0.2124	0.1539	0.1691
creatinine	rs700236	Gorski et al. (2017)	A	2 x 10-18	0.0084 unit increase	[0.0066-0.0102]	C9	G	-0.1401	0.1017	0.1700
creatinine	rs11637353	Sinnott-Armstrong et al. (2021)	T	7 x 10-13	0.0188 unit increase	[0.014-0.024]	ODF3L1, CSPG4	T	-0.1422	0.1043	0.1741
creatinine	rs9309473	Sinnott-Armstrong et al. (2021)	G	4 x 10-70	0.0499 unit decrease	[0.044-0.055]	ALMS1	G	-0.1519	0.1132	0.1809
creatinine	rs8123293	Sinnott-Armstrong et al. (2021)	G	1 x 10-9	0.0226 unit increase	[0.015-0.03]	BCAS1, CYP24A1	G	-0.2172	0.1627	0.1833
creatinine	rs78070307	Sinnott-Armstrong et al. (2021)	C	4 x 10-13	0.0306 unit increase	[0.022-0.039]	Y_RNA, PLEKHH2	C	-0.2423	0.1821	0.1847
creatinine	rs16942751	Kanai et al. (2018)	NR	3 x 10-9	0.02425 unit increase	[0.016-0.032]	AQP4-AS1	A	-0.2121	0.1604	0.1875
creatinine	rs34095326	Sinnott-Armstrong et al. (2021)	A	3 x 10-10	0.0253 unit decrease	[0.017-0.033]	TOMM40	A	0.2157	0.1634	0.1884

creatinine	rs1423237	Sinnott-Armstrong et al. (2021)	G	2 x 10-13	0.0319 unit increase	[0.023-0.04]	'-	G	0.2356	0.1806	0.1934
creatinine	rs11158984	Sinnott-Armstrong et al. (2021)	T	4 x 10-9	0.0163 unit increase	[0.011-0.022]	DPF3	T	0.1380	0.1064	0.1962
creatinine	rs72825201	Sinnott-Armstrong et al. (2021)	C	5 x 10-26	0.051 unit increase	[0.042-0.06]	CDK12	C	0.2487	0.1921	0.1968
creatinine	rs4757489	Sinnott-Armstrong et al. (2021)	G	9 x 10-10	0.0154 unit increase	[0.011-0.02]	PLEKHA7	T	0.1365	0.1056	0.1973
creatinine	rs507666	Sinnott-Armstrong et al. (2021)	A	6 x 10-13	0.0224 unit decrease	[0.016-0.028]	ABO	A	0.1846	0.1428	0.1977
creatinine	rs302972	Williams et al. (2015)	NR	3 x 10-6	NR	NR	CMAHP	C	-0.3579	0.2769	0.1977
creatinine	rs1371614	Sinnott-Armstrong et al. (2021)	T	4 x 10-10	0.0173 unit increase	[0.012-0.023]	DPYSL5	T	0.1393	0.1078	0.1978
creatinine	rs819196	Graham et al. (2019)	A	4 x 10-11	0.04046 unit decrease	[0.03-0.051]	STC1	T	0.1222	0.0951	0.2005
creatinine	rs3798164	Sinnott-Armstrong et al. (2021)	A	1 x 10-19	0.0221 unit increase	[0.017-0.027]	SLC22A1	A	-0.1298	0.1016	0.2027
creatinine	rs35657869	Sinnott-Armstrong et al. (2021)	T	7 x 10-12	0.0352 unit increase	[0.025-0.045]	ANKRD11	T	0.2658	0.2085	0.2037
creatinine	rs3820716	Pattaro et al. (2016)	A	1 x 10-6	0.0039 unit decrease	[0.0023-0.0055]	ACVR2A	G	-0.1238	0.0973	0.2045
creatinine	rs113966765	Sinnott-Armstrong et al. (2021)	A	2 x 10-11	0.0425 unit increase	[0.03-0.055]	TPCN2	A	0.2899	0.2284	0.2058
creatinine	rs2230602	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0259 unit increase	[0.017-0.035]	PTPN12	A	0.2799	0.2216	0.2081
creatinine	rs72834650	Sinnott-Armstrong et al. (2021)	A	3 x 10-12	0.0584 unit increase	[0.042-0.075]	BCAS3	A	0.4359	0.3471	0.2106
creatinine	rs34400381	Sinnott-Armstrong et al. (2021)	A	2 x 10-26	0.0701 unit decrease	[0.057-0.083]	SLC25A45	A	0.3189	0.2548	0.2122
creatinine	rs34400381	Graham et al. (2019)	A	3 x 10-8	0.0903 unit decrease	[0.061-0.12]	SLC25A45	A	0.3189	0.2548	0.2122
creatinine	rs2928148	Pattaro et al. (2016)	A	3 x 10-8	0.005 unit increase	[0.0032-0.0068]	INO80	G	0.1205	0.0968	0.2146
creatinine	rs2104480	Sinnott-Armstrong et al. (2021)	G	6 x 10-18	0.0238 unit decrease	[0.018-0.029]	MED4	C	-0.1343	0.1080	0.2149
creatinine	rs6058093	Gorski et al. (2017)	A	2 x 10-13	0.0074 unit decrease	[0.0054-0.0094]	PIGU	C	0.1173	0.0944	0.2155
creatinine	rs3758086	Pattaro et al. (2016)	A	2 x 10-15	0.0071 unit decrease	[0.0053-0.0089]	STC1	A	0.1204	0.0971	0.2164

creatinine	rs12930346	Sinnott-Armstrong et al. (2021)	T	3 x 10-12	0.0176 unit increase	[0.013-0.022]	DPEP1	T	-0.1251	0.1011	0.2173
creatinine	rs11666497	Pattaro et al. (2016)	T	4 x 10-8	0.0058 unit decrease	[0.0036-0.008]	SIPA1L3	T	-0.1717	0.1395	0.2197
creatinine	rs16882647	Sinnott-Armstrong et al. (2021)	G	2 x 10-10	0.0296 unit decrease	[0.021-0.039]	ARL¬†15.00	G	-0.2671	0.2175	0.2209
creatinine	rs35955110	Sinnott-Armstrong et al. (2021)	C	2 x 10-23	0.0257 unit increase	[0.021-0.031]	NFE2L2	C	-0.1297	0.1059	0.2221
creatinine	rs6142209	Sinnott-Armstrong et al. (2021)	C	3 x 10-19	0.0228 unit decrease	[0.018-0.028]	PIGU	C	0.1173	0.0977	0.2315
creatinine	rs4237268	Graham et al. (2019)	A	5 x 10-13	0.04639 unit decrease	[0.035-0.058]	PIP5K1B	G	0.1172	0.0979	0.2325
creatinine	rs55678693	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.021 unit increase	[0.014-0.028]	NMRK2, DAPK3	T	0.1807	0.1526	0.2375
creatinine	rs13175510	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0274 unit increase	[0.019-0.036]	KRT18P56, LINC00604	T	-0.1985	0.1677	0.2378
creatinine	rs16946635	Sinnott-Armstrong et al. (2021)	C	4 x 10-14	0.0201 unit increase	[0.015-0.025]	SQOR	C	0.1227	0.1039	0.2389
creatinine	rs10109414	Köttgen et al. (2010)	T	1 x 10-8	NR	NR	STC1	T	0.1142	0.0968	0.2394
creatinine	rs10109414	Pattaro et al. (2016)	T	4 x 10-16	0.0075 unit decrease	[0.0057-0.0093]	STC1	T	0.1142	0.0968	0.2394
creatinine	rs2018675	Sinnott-Armstrong et al. (2021)	T	4 x 10-12	0.0175 unit decrease	[0.013-0.022]	SLC47A1	T	-0.1209	0.1026	0.2399
creatinine	rs4077189	Sinnott-Armstrong et al. (2021)	A	4 x 10-12	0.0284 unit increase	[0.02-0.036]	ETV5	A	-0.2027	0.1735	0.2441
creatinine	rs3814995	Sinnott-Armstrong et al. (2021)	T	2 x 10-16	0.0213 unit decrease	[0.016-0.026]	NPHS1	T	0.1207	0.1035	0.2452
creatinine	rs7569236	Sinnott-Armstrong et al. (2021)	T	2 x 10-11	0.0344 unit increase	[0.024-0.044]	LRP2	T	-0.2781	0.2400	0.2479
creatinine	rs983309	Sinnott-Armstrong et al. (2021)	G	2 x 10-11	0.0248 unit decrease	[0.018-0.032]	RNU6-526P, RNU6-1151P	T	-0.1686	0.1457	0.2484
creatinine	rs11780207	Sinnott-Armstrong et al. (2021)	A	2 x 10-13	0.0184 unit decrease	[0.014-0.023]	BIN3	A	0.1244	0.1079	0.2504
creatinine	rs596881	Sinnott-Armstrong et al. (2021)	C	9 x 10-40	0.0507 unit increase	[0.043-0.058]	SLC22A2	T	-0.2005	0.1740	0.2506
creatinine	rs74379084	Sinnott-Armstrong et al. (2021)	C	1 x 10-9	0.0443 unit increase	[0.03-0.059]	TARID	C	0.5413	0.4709	0.2517
creatinine	rs163884	Sinnott-Armstrong et al. (2021)	A	1 x 10-10	0.0195 unit decrease	[0.014-0.025]	DCDC1	C	-0.1378	0.1201	0.2523

creatinine	rs3782787	Kanai et al. (2018)	NR	7 x 10-11	0.02715 unit increase	[0.019-0.035]	TSPAN9	G	0.1325	0.1158	0.2540
creatinine	rs7275695	Sinnott-Armstrong et al. (2021)	T	1 x 10-10	0.0164 unit increase	[0.012-0.021]	'-	T	-0.1151	0.1021	0.2605
creatinine	rs476235	Sinnott-Armstrong et al. (2021)	A	2 x 10-16	0.0204 unit increase	[0.016-0.025]	SLC22A2	A	0.1109	0.0987	0.2624
creatinine	rs113246091	Gorski et al. (2017)	A	2 x 10-9	0.0095 unit decrease	[0.0064-0.0126]	'-	A	0.1830	0.1634	0.2641
creatinine	rs4305459	Sinnott-Armstrong et al. (2021)	A	4 x 10-10	0.0245 unit increase	[0.017-0.032]	TRPC1	G	-0.1920	0.1716	0.2644
creatinine	rs11543349	Yasukochi et al. (2018)	C	3 x 10-8	0.01 umol/L increase	[0.0041-0.0159]	OGFR	C	-0.2604	0.2339	0.2670
creatinine	rs78573217	Sinnott-Armstrong et al. (2021)	A	7 x 10-21	0.0562 unit increase	[0.044-0.068]	PRKAG2	A	0.3509	0.3158	0.2679
creatinine	rs6851943	Kanai et al. (2018)	NR	6 x 10-9	0.02146 unit increase	[0.014-0.029]	H2AZ1-DT	T	-0.1143	0.1035	0.2707
creatinine	rs665731	Sinnott-Armstrong et al. (2021)	T	3 x 10-9	0.0182 unit increase	[0.012-0.024]	ZBTB16	T	0.1220	0.1105	0.2708
creatinine	rs6741055	Sinnott-Armstrong et al. (2021)	G	3 x 10-11	0.0158 unit increase	[0.011-0.021]	PDE1A	G	-0.1129	0.1029	0.2736
creatinine	rs963837	Pattaro et al. (2016)	T	6 x 10-18	0.0078 unit decrease	[0.006-0.0096]	MPPED2-AS1	C	-0.1054	0.0962	0.2747
creatinine	rs963837	Sinnott-Armstrong et al. (2021)	C	1 x 10-65	0.0411 unit decrease	[0.036-0.046]	MPPED2-AS1	C	-0.1054	0.0962	0.2747
creatinine	rs963837	Kanai et al. (2018)	NR	3 x 10-21	0.03989 unit decrease	[0.032-0.048]	MPPED2-AS1	C	-0.1054	0.0962	0.2747
creatinine	rs2888875	Pattaro et al. (2016)	A	7 x 10-7	0.0041 unit increase	[0.0025-0.0057]	THADA	G	-0.1201	0.1105	0.2786
creatinine	rs1800574	Sinnott-Armstrong et al. (2021)	T	1 x 10-15	0.056 unit increase	[0.042-0.07]	HNF1A-AS1, HNF1A	T	-0.3154	0.2925	0.2821
creatinine	rs7208487	Sinnott-Armstrong et al. (2021)	G	2 x 10-33	0.0395 unit decrease	[0.033-0.046]	FBXL20	G	-0.1410	0.1321	0.2868
creatinine	rs7208487	Pattaro et al. (2016)	T	9 x 10-14	0.0091 unit decrease	[0.0067-0.0115]	FBXL20	G	-0.1410	0.1321	0.2868
creatinine	rs59366264	Sinnott-Armstrong et al. (2021)	G	8 x 10-10	0.0179 unit decrease	[0.012-0.024]	IMP3	G	-0.1346	0.1271	0.2909
creatinine	rs284859	Sinnott-Armstrong et al. (2021)	T	3 x 10-17	0.0265 unit decrease	[0.02-0.033]	WBP1L	T	0.1488	0.1410	0.2925
creatinine	rs267738	Gorski et al. (2017)	T	1 x 10-14	0.0091 unit decrease	[0.0069-0.0113]	CERS2	G	-0.1276	0.1228	0.3000

creatinine	rs8023655	Kanai et al. (2018)	NR	3 x 10-9	0.02691 unit decrease	[0.018-0.036]	AP4E1, RPL32P30	C	-0.1357	0.1312	0.3024
creatinine	rs117174465	Sinnott-Armstrong et al. (2021)	G	1 x 10-20	0.0821 unit decrease	[0.065-0.099]	PTPN9, SIN3A	G	0.3591	0.3485	0.3041
creatinine	rs117935574	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0498 unit decrease	[0.034-0.066]	LPA	T	-0.2869	0.2790	0.3051
creatinine	rs141428560	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0662 unit increase	[0.044-0.088]	SGO1-AS1	A	-0.5295	0.5153	0.3054
creatinine	rs9397738	Sinnott-Armstrong et al. (2021)	A	8 x 10-12	0.0233 unit decrease	[0.017-0.03]	RPS4XP8, SCAF8	G	0.1188	0.1157	0.3058
creatinine	rs549752	Kanai et al. (2018)	NR	1 x 10-25	0.04186 unit decrease	[0.034-0.05]	NFATC1	G	0.1143	0.1115	0.3066
creatinine	rs4514898	Sinnott-Armstrong et al. (2021)	T	8 x 10-13	0.0383 unit decrease	[0.028-0.049]	TPRKB, DUSP11	T	-0.2034	0.1986	0.3069
creatinine	rs223502	Sinnott-Armstrong et al. (2021)	C	6 x 10-14	0.0197 unit decrease	[0.015-0.025]	MANBA	C	-0.1138	0.1112	0.3075
creatinine	rs16874052	Sinnott-Armstrong et al. (2021)	G	9 x 10-11	0.0356 unit decrease	[0.025-0.046]	ERVH-1, PPARGC1A	G	-0.2697	0.2664	0.3125
creatinine	rs1887646	Sinnott-Armstrong et al. (2021)	A	6 x 10-10	0.0148 unit increase	[0.01-0.02]	LINC00393	G	-0.1023	0.1016	0.3152
creatinine	rs1365242	Sinnott-Armstrong et al. (2021)	C	3 x 10-21	0.0227 unit increase	[0.018-0.027]	DUOXA1	C	-0.0941	0.0961	0.3286
creatinine	rs2727562	Sinnott-Armstrong et al. (2021)	G	8 x 10-20	0.0246 unit decrease	[0.019-0.03]	PRKAG2	G	-0.1131	0.1166	0.3335
creatinine	rs11056396	Sinnott-Armstrong et al. (2021)	C	2 x 10-13	0.0266 unit decrease	[0.02-0.034]	RERG	C	0.1392	0.1451	0.3384
creatinine	rs3925584	Graham et al. (2019)	C	2 x 10-9	0.03693 unit decrease	[0.026-0.048]	DCDC1	C	-0.0919	0.0960	0.3396
creatinine	rs3925584	Pattaro et al. (2016)	T	5 x 10-16	0.0074 unit decrease	[0.0056-0.0092]	DCDC1	C	-0.0919	0.0960	0.3396
creatinine	rs3925584	Gorski et al. (2017)	T	2 x 10-16	0.0079 unit decrease	[0.0061-0.0097]	DCDC1	C	-0.0919	0.0960	0.3396
creatinine	rs807601	Gorski et al. (2017)	T	4 x 10-11	0.0067 unit increase	[0.0047-0.0087]	DDX1, LINC01804	T	-0.0967	0.1016	0.3426
creatinine	rs807601	Pattaro et al. (2016)	T	7 x 10-12	0.0064 unit increase	[0.0046-0.0082]	DDX1, LINC01804	T	-0.0967	0.1016	0.3426
creatinine	rs3750082	Pattaro et al. (2016)	A	3 x 10-8	0.0045 unit increase	[0.0029-0.0061]	KBTBD2	A	-0.0981	0.1032	0.3427
creatinine	rs6088580	Pattaro et al. (2016)	C	2 x 10-9	0.0049 unit decrease	[0.0033-0.0065]	PIGU, NCOA6	C	-0.0916	0.0970	0.3462

creatinine	rs691329	Kanai et al. (2018)	NR	2 x 10-8	0.02212 unit decrease	[0.014-0.03]	'-	C	-0.1138	0.1216	0.3508
creatinine	rs267734	Köttgen et al. (2010)	C	1 x 10-12	0.01 unit increase	[0.004-0.016]	CERS2, ANXA9	C	-0.1143	0.1223	0.3509
creatinine	rs267734	Pattaro et al. (2016)	T	4 x 10-13	0.0079 unit decrease	[0.0057-0.0101]	CERS2, ANXA9	C	-0.1143	0.1223	0.3509
creatinine	rs267734	Pattaro et al. (2016)	T	3 x 10-12	0.0079 unit decrease	[0.0057-0.0101]	CERS2, ANXA9	C	-0.1143	0.1223	0.3509
creatinine	rs6971211	Gorski et al. (2017)	NR	7 x 10-8	NR	NR	SHH	T	-0.0909	0.0972	0.3511
creatinine	rs898696	Kanai et al. (2018)	NR	2 x 10-8	0.02056 unit decrease	[0.013-0.028]	SHH	T	-0.0926	0.0991	0.3514
creatinine	rs12438970	Sinnott-Armstrong et al. (2021)	C	4 x 10-23	0.0527 unit increase	[0.042-0.063]	H3P39, SHF	C	-0.2249	0.2422	0.3542
creatinine	rs55792109	Sinnott-Armstrong et al. (2021)	T	7 x 10-10	0.019 unit increase	[0.013-0.025]	ACSM3	T	-0.1164	0.1254	0.3543
creatinine	rs16989695	Sinnott-Armstrong et al. (2021)	A	2 x 10-9	0.0143 unit increase	[0.0096-0.019]	PLIN4	G	-0.0862	0.0933	0.3563
creatinine	rs3008858	Sinnott-Armstrong et al. (2021)	C	3 x 10-9	0.0161 unit increase	[0.011-0.021]	DNAI4	G	-0.1037	0.1122	0.3563
creatinine	rs1293298	Sinnott-Armstrong et al. (2021)	C	2 x 10-9	0.0173 unit increase	[0.012-0.023]	CTSB	C	-0.1068	0.1162	0.3590
creatinine	rs3902989	Sinnott-Armstrong et al. (2021)	T	1 x 10-9	0.0372 unit increase	[0.025-0.049]	HMGN2P25, GRK7	T	0.1982	0.2160	0.3597
creatinine	rs35472707	Gorski et al. (2017)	NR	4 x 10-6	NR	NR	LRP2	T	-0.2309	0.2517	0.3600
creatinine	rs729761	Graham et al. (2019)	G	2 x 10-11	0.045306 unit increase	[0.033-0.057]	LINC02537, VEGFA	T	-0.0972	0.1063	0.3616
creatinine	rs79907881	Sinnott-Armstrong et al. (2021)	T	2 x 10-14	0.0634 unit decrease	[0.047-0.08]	SLC22A3	T	-0.2586	0.2842	0.3640
creatinine	rs55653892	Sinnott-Armstrong et al. (2021)	C	4 x 10-9	0.0162 unit decrease	[0.011-0.021]	ANP32BP1, DNM1P34	C	-0.1011	0.1113	0.3649
creatinine	rs55653892	Sinnott-Armstrong et al. (2021)	C	4 x 10-20	0.0249 unit decrease	[0.02-0.03]	ANP32BP1, DNM1P34	C	-0.1011	0.1113	0.3649
creatinine	rs2781656	Kanai et al. (2018)	NR	3 x 10-11	0.02604 unit increase	[0.018-0.034]	ARG1	T	0.1136	0.1252	0.3653
creatinine	rs55973697	Sinnott-Armstrong et al. (2021)	C	7 x 10-21	0.0853 unit decrease	[0.067-0.103]	ULK3	C	0.5317	0.5867	0.3658
creatinine	rs12437561	Sinnott-Armstrong et al. (2021)	T	5 x 10-10	0.0208 unit increase	[0.014-0.027]	IGF1R	T	0.1237	0.1368	0.3667

creatinine	rs4420638	Sinnott-Armstrong et al. (2021)	G	2 x 10-20	0.0282 unit decrease	[0.022-0.034]	APOC1, APOC1P1	G	0.1144	0.1270	0.3687
creatinine	rs347685	Köttgen et al. (2010)	C	3 x 10-11	1.09 unit increase	[0.007-0.011]	TFDP2	C	-0.0939	0.1045	0.3697
creatinine	rs347685	Pattaro et al. (2016)	A	2 x 10-14	0.0077 unit decrease	[0.0053-0.0101]	TFDP2	C	-0.0939	0.1045	0.3697
creatinine	rs6029516	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0145 unit decrease	[0.0098-0.0192]	RNU2-52P	T	-0.0889	0.0990	0.3699
creatinine	rs1600249	Sinnott-Armstrong et al. (2021)	T	1 x 10-11	0.019 unit decrease	[0.014-0.024]	BLK	T	-0.1049	0.1171	0.3715
creatinine	rs3842752	Sinnott-Armstrong et al. (2021)	A	9 x 10-14	0.0213 unit increase	[0.016-0.027]	INS-IGF2, INS	A	0.1076	0.1202	0.3719
creatinine	rs17391694	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0212 unit increase	[0.014-0.028]	GIPC2, RNFT1P2	T	0.1238	0.1388	0.3734
creatinine	rs12451696	Sinnott-Armstrong et al. (2021)	G	5 x 10-10	0.0149 unit increase	[0.01-0.02]	SLC47A1	G	0.0899	0.1014	0.3767
creatinine	rs35094860	Sinnott-Armstrong et al. (2021)	G	3 x 10-31	0.0489 unit decrease	[0.041-0.057]	'-	G	0.1679	0.1904	0.3790
creatinine	rs72657823	Sinnott-Armstrong et al. (2021)	A	4 x 10-17	0.0425 unit decrease	[0.033-0.052]	CCDC158	A	0.2084	0.2367	0.3798
creatinine	rs10062079	Graham et al. (2019)	A	5 x 10-12	0.042873 unit increase	[0.032-0.054]	C9, DAB2	A	-0.0909	0.1034	0.3800
creatinine	rs4805834	Chambers et al. (2010)	A	5 x 10-8	1 % decrease	[0.7-1.3]	CEP89	T	-0.1213	0.1380	0.3803
creatinine	rs7106615	Sinnott-Armstrong et al. (2021)	A	5 x 10-11	0.0189 unit decrease	[0.013-0.025]	'-	G	0.0987	0.1124	0.3811
creatinine	rs2235808	Pattaro et al. (2016)	C	3 x 10-7	0.006 unit increase	[0.0036-0.0084]	JPH2	G	0.1221	0.1403	0.3851
creatinine	rs17216525	Sinnott-Armstrong et al. (2021)	T	2 x 10-12	0.0306 unit increase	[0.022-0.039]	PBX4, CILP2	T	-0.1610	0.1856	0.3868
creatinine	rs10869365	Sinnott-Armstrong et al. (2021)	T	1 x 10-32	0.0311 unit decrease	[0.026-0.036]	PIP5K1B	T	-0.0979	0.1132	0.3881
creatinine	rs28930677	Sinnott-Armstrong et al. (2021)	T	2 x 10-17	0.0483 unit increase	[0.037-0.059]	EPB41L5	T	0.2101	0.2433	0.3888
creatinine	rs6143035	Sinnott-Armstrong et al. (2021)	C	3 x 10-9	0.0163 unit decrease	[0.011-0.022]	LAMA5	C	-0.0962	0.1118	0.3903
creatinine	rs67723215	Sinnott-Armstrong et al. (2021)	C	2 x 10-9	0.0189 unit increase	[0.013-0.025]	RPL13, CPNE7	C	-0.1140	0.1340	0.3959
creatinine	rs7247715	Sinnott-Armstrong et al. (2021)	C	1 x 10-32	0.0398 unit increase	[0.033-0.046]	FAAP24	T	-0.1224	0.1440	0.3962

creatinine	rs422421	Sinnott-Armstrong et al. (2021)	C	9 x 10-11	0.0188 unit increase	[0.013-0.024]	FGFR4	T	-0.1014	0.1195	0.3970
creatinine	rs744683	Sinnott-Armstrong et al. (2021)	G	6 x 10-11	0.0158 unit decrease	[0.011-0.021]	STAMBP, ACTG2	G	0.0782	0.0936	0.4043
creatinine	rs2990246	Kanai et al. (2018)	NR	1 x 10-12	0.03958 unit decrease	[0.029-0.051]	MTX1P1, GBAP1	C	0.0847	0.1017	0.4059
creatinine	rs10758782	Sinnott-Armstrong et al. (2021)	T	1 x 10-11	0.0346 unit decrease	[0.025-0.045]	TPD52L3, UHRF2	G	0.1777	0.2134	0.4060
creatinine	rs4805025	Sinnott-Armstrong et al. (2021)	T	4 x 10-13	0.0203 unit increase	[0.015-0.026]	FAAP24	T	-0.0912	0.1101	0.4085
creatinine	rs17216707	Pattaro et al. (2016)	T	9 x 10-15	0.0077 unit decrease	[0.0057-0.0097]	CYP24A1, BCAS1	C	0.1060	0.1281	0.4090
creatinine	rs11959928	Pattaro et al. (2016)	A	7 x 10-19	0.0082 unit decrease	[0.0064-0.01]	C9, DAB2	A	-0.0850	0.1031	0.4108
creatinine	rs11959928	Pattaro et al. (2016)	A	2 x 10-20	0.0083 unit decrease	[0.0065-0.0101]	C9, DAB2	A	-0.0850	0.1031	0.4108
creatinine	rs11959928	Köttgen et al. (2010)	A	1 x 10-7	0.01 unit decrease	[0.007-0.011]	C9, DAB2	A	-0.0850	0.1031	0.4108
creatinine	rs7759001	Pattaro et al. (2016)	A	2 x 10-8	0.0051 unit decrease	[0.0033-0.0069]	ZNF204P, ZNF391	G	0.1021	0.1243	0.4122
creatinine	rs2290263	Pattaro et al. (2016)	A	7 x 10-7	0.0045 unit increase	[0.0027-0.0063]	'-	G	-0.0944	0.1152	0.4133
creatinine	rs74469790	Sinnott-Armstrong et al. (2021)	A	3 x 10-13	0.0354 unit increase	[0.026-0.045]	LINC00200, ADARB2	A	0.1413	0.1736	0.4166
creatinine	rs241812	Kanai et al. (2018)	NR	5 x 10-9	0.02155 unit decrease	[0.014-0.029]	SIM1	G	0.0847	0.1054	0.4228
creatinine	rs476633	Pattaro et al. (2016)	C	9 x 10-9	0.0051 unit increase	[0.0033-0.0069]	INO80	G	0.0770	0.0962	0.4243
creatinine	rs6712340	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0203 unit decrease	[0.014-0.027]	TFCP2L1	T	0.1072	0.1343	0.4254
creatinine	rs4968555	Sinnott-Armstrong et al. (2021)	A	1 x 10-10	0.0341 unit decrease	[0.024-0.044]	BCAS3	T	-0.1619	0.2030	0.4262
creatinine	rs304930	Sinnott-Armstrong et al. (2021)	C	2 x 10-17	0.0348 unit decrease	[0.027-0.043]	ATP9B, NFATC1	C	0.1307	0.1642	0.4268
creatinine	rs11557049	Sinnott-Armstrong et al. (2021)	T	1 x 10-14	0.0374 unit increase	[0.028-0.047]	PDE7A	T	0.1815	0.2282	0.4273
creatinine	rs316009	Pattaro et al. (2016)	T	4 x 10-19	0.0131 unit increase	[0.01-0.016]	SLC22A2	T	-0.1385	0.1743	0.4277
creatinine	rs316020	Kanai et al. (2018)	NR	1 x 10-11	0.0553 unit increase	[0.039-0.071]	SLC22A2	A	-0.1385	0.1743	0.4277

creatinine	rs112994348	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0314 unit decrease	[0.021-0.042]	SIN3A	T	-0.1685	0.2123	0.4284
creatinine	rs11588837	Sinnott-Armstrong et al. (2021)	G	3 x 10-11	0.0236 unit decrease	[0.017-0.031]	RN7SL480P, PLEKHO1	G	0.1156	0.1461	0.4300
creatinine	rs2861422	Pattaro et al. (2016)	T	9 x 10-14	0.0074 unit increase	[0.0054-0.0094]	TFDP2	T	-0.0825	0.1044	0.4303
creatinine	rs75933044	Sinnott-Armstrong et al. (2021)	G	7 x 10-11	0.0256 unit decrease	[0.018-0.033]	VPS72, PIP5K1A	G	0.1475	0.1874	0.4321
creatinine	rs77061140	Sinnott-Armstrong et al. (2021)	T	3 x 10-11	0.0266 unit decrease	[0.019-0.034]	FOXO3	T	-0.1273	0.1626	0.4344
creatinine	rs1317983	Gorski et al. (2017)	T	1 x 10-13	0.008 unit increase	[0.006-0.01]	LINC02537, VEGFA	T	-0.0822	0.1061	0.4390
creatinine	rs881858	Sinnott-Armstrong et al. (2021)	A	3 x 10-62	0.0428 unit increase	[0.038-0.048]	VEGFA, LINC02537	G	-0.0822	0.1061	0.4390
creatinine	rs881858	Pattaro et al. (2016)	A	4 x 10-14	0.0081 unit decrease	[0.0059-0.0103]	VEGFA, LINC02537	G	-0.0822	0.1061	0.4390
creatinine	rs881858	Köttgen et al. (2010)	G	9 x 10-14	1.08 unit increase	[0.007-0.015]	VEGFA, LINC02537	G	-0.0822	0.1061	0.4390
creatinine	rs881858	Kanai et al. (2018)	NR	4 x 10-9	0.03291 unit increase	[0.022-0.044]	VEGFA, LINC02537	G	-0.0822	0.1061	0.4390
creatinine	rs9472135	Pattaro et al. (2016)	T	3 x 10-15	0.008 unit decrease	[0.006-0.01]	LINC02537, VEGFA	C	-0.0822	0.1061	0.4390
creatinine	rs116520905	Sinnott-Armstrong et al. (2021)	G	2 x 10-9	0.0317 unit increase	[0.021-0.042]	ABCG5, DYNC2LI1	G	-0.1839	0.2373	0.4390
creatinine	rs28607761	Sinnott-Armstrong et al. (2021)	G	3 x 10-14	0.0227 unit increase	[0.017-0.029]	AP3B2, ACTG1P17	G	0.0915	0.1180	0.4391
creatinine	rs17358000	Rhee et al. (2013)	NR	8 x 10-6	0.32975006 unit increase	[0.19-0.47]	'-	C	0.1416	0.1842	0.4429
creatinine	rs12827428	Rhee et al. (2013)	NR	5 x 10-6	0.46655247 unit increase	[0.27-0.67]	'-	C	-0.0879	0.1152	0.4462
creatinine	rs158528	Sinnott-Armstrong et al. (2021)	G	2 x 10-10	0.0161 unit increase	[0.011-0.021]	CYP24A1, BCAS1	A	0.0756	0.0993	0.4474
creatinine	rs7475348	Kanai et al. (2018)	NR	1 x 10-16	0.03327 unit decrease	[0.025-0.041]	MYPN	T	0.0781	0.1036	0.4518
creatinine	rs13146355	Gorski et al. (2017)	A	3 x 10-37	0.0121 unit decrease	[0.01-0.014]	SHROOM3	A	0.0750	0.0998	0.4535
creatinine	rs13146355	Graham et al. (2019)	A	1 x 10-17	0.051999 unit increase	[0.041-0.063]	SHROOM3	A	0.0750	0.0998	0.4535
creatinine	rs11077558	Sinnott-Armstrong et al. (2021)	G	1 x 10-12	0.0232 unit increase	[0.017-0.03]	WIPI1	C	0.1077	0.1435	0.4537

creatinine	rs6795744	Pattaro et al. (2016)	A	3 x 10-8	0.006 unit increase	[0.0038-0.0082]	WNT7A	A	0.1048	0.1400	0.4549
creatinine	rs10794720	Pattaro et al. (2016)	T	5 x 10-8	0.0093 unit decrease	[0.006-0.0126]	WDR37	T	0.1325	0.1771	0.4553
creatinine	rs10794720	Köttgen et al. (2010)	T	1 x 10-8	0.01 unit decrease	[0.010-0.018]	WDR37	T	0.1325	0.1771	0.4553
creatinine	rs28362906	Sinnott-Armstrong et al. (2021)	A	2 x 10-9	0.0304 unit decrease	[0.02-0.04]	SEMA7A	A	-0.1677	0.2247	0.4565
creatinine	rs33972313	Sinnott-Armstrong et al. (2021)	T	1 x 10-9	0.039 unit increase	[0.026-0.052]	SLC23A1	T	0.2262	0.3032	0.4566
creatinine	rs913423	Pattaro et al. (2016)	A	8 x 10-8	0.0043 unit decrease	[0.0027-0.0059]	NIP7P1, CYP26A1	G	0.0732	0.0982	0.4571
creatinine	rs948493	Sinnott-Armstrong et al. (2021)	T	5 x 10-26	0.0265 unit increase	[0.022-0.031]	AP5B1, OVOL1	T	0.0794	0.1067	0.4577
creatinine	rs10115104	Sinnott-Armstrong et al. (2021)	C	4 x 10-10	0.0292 unit increase	[0.02-0.038]	PIP5K1B	C	-0.1314	0.1767	0.4578
creatinine	rs2954038	Sinnott-Armstrong et al. (2021)	A	2 x 10-23	0.026 unit increase	[0.021-0.031]	TRIB1	C	0.0753	0.1016	0.4593
creatinine	rs17556694	Sinnott-Armstrong et al. (2021)	T	3 x 10-9	0.03 unit decrease	[0.02-0.04]	NRF1	T	0.1686	0.2284	0.4612
creatinine	rs2279238	Kanai et al. (2018)	NR	2 x 10-8	0.02137 unit decrease	[0.014-0.029]	NR1H3	T	-0.1139	0.1544	0.4617
creatinine	rs9682041	Pattaro et al. (2016)	T	3 x 10-8	0.0068 unit decrease	[NR]	SKIL	C	0.1218	0.1668	0.4660
creatinine	rs9682041	Pattaro et al. (2016)	T	4 x 10-8	0.0056 unit decrease	[NR]	SKIL	C	0.1218	0.1668	0.4660
creatinine	rs79370442	Sinnott-Armstrong et al. (2021)	A	4 x 10-9	0.0414 unit decrease	[0.028-0.055]	SLC22A2	A	-0.2336	0.3201	0.4664
creatinine	rs4399402	Kanai et al. (2018)	NR	6 x 10-9	0.02775 unit decrease	[0.018-0.037]	SOX5	A	0.0838	0.1152	0.4677
creatinine	rs75530000	Kanai et al. (2018)	NR	3 x 10-10	0.03013 unit increase	[0.021-0.04]	CHAF1B	T	-0.1335	0.1849	0.4712
creatinine	rs2337106	Kanai et al. (2018)	NR	5 x 10-9	0.02167 unit decrease	[0.014-0.029]	SMAD7	C	-0.0732	0.1021	0.4743
creatinine	rs117116870	Sinnott-Armstrong et al. (2021)	A	1 x 10-9	0.0564 unit increase	[0.038-0.075]	PRKAG2	A	0.2776	0.3904	0.4780
creatinine	rs12935539	Kanai et al. (2018)	NR	9 x 10-10	0.02436 unit increase	[0.017-0.032]	LINC01571, RN7SKP142	C	0.0865	0.1227	0.4815
creatinine	rs769449	Sinnott-Armstrong et al. (2021)	A	5 x 10-23	0.0358 unit decrease	[0.029-0.043]	APOE	A	0.1140	0.1633	0.4859

creatinine	rs6606567	Sinnott-Armstrong et al. (2021)	G	2 x 10-9	0.0188 unit decrease	[0.013-0.025]	CYSRT1	A	-0.0948	0.1361	0.4869
creatinine	rs4881540	Sinnott-Armstrong et al. (2021)	T	8 x 10-35	0.0437 unit decrease	[0.037-0.051]	LARP4B	C	-0.1078	0.1559	0.4900
creatinine	rs72823347	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0292 unit decrease	[0.02-0.039]	RPL19	T	-0.1731	0.2511	0.4912
creatinine	rs11857703	Sinnott-Armstrong et al. (2021)	A	5 x 10-13	0.0181 unit decrease	[0.013-0.023]	LACTB, TPM1	A	-0.0676	0.0996	0.4977
creatinine	rs72925159	Sinnott-Armstrong et al. (2021)	G	7 x 10-17	0.0503 unit increase	[0.039-0.062]	MTX2	G	0.1598	0.2355	0.4981
creatinine	rs11640962	Sinnott-Armstrong et al. (2021)	G	4 x 10-26	0.0393 unit increase	[0.032-0.047]	PDILT	G	0.0913	0.1395	0.5137
creatinine	rs56152258	Sinnott-Armstrong et al. (2021)	A	4 x 10-11	0.0358 unit increase	[0.025-0.046]	DBN1	A	0.1333	0.2050	0.5162
creatinine	rs11929195	Sinnott-Armstrong et al. (2021)	G	5 x 10-11	0.0164 unit decrease	[0.012-0.021]	ILDR1	A	0.0703	0.1085	0.5177
creatinine	rs2960266	Sinnott-Armstrong et al. (2021)	T	4 x 10-10	0.0155 unit decrease	[0.011-0.02]	SH2B2	T	0.0663	0.1029	0.5199
creatinine	rs58542926	Sinnott-Armstrong et al. (2021)	T	2 x 10-12	0.0317 unit increase	[0.023-0.041]	TM6SF2	T	-0.1334	0.2087	0.5233
creatinine	rs8081144	Sinnott-Armstrong et al. (2021)	A	9 x 10-20	0.0387 unit decrease	[0.03-0.047]	NEUROD2, CDK12	A	-0.1381	0.2182	0.5275
creatinine	rs12144044	Gorski et al. (2017)	A	3 x 10-8	0.0061 unit decrease	[0.0039-0.0083]	RHOC	A	-0.0715	0.1134	0.5289
creatinine	rs4665987	Kanai et al. (2018)	NR	2 x 10-21	0.03616 unit decrease	[0.029-0.044]	C2orf16, GCKR	A	0.0686	0.1099	0.5335
creatinine	rs16852193	Pattaro et al. (2016)	T	7 x 10-6	0.0061 unit increase	[0.0034-0.0088]	EGFEM1P	T	0.0918	0.1473	0.5339
creatinine	rs7860634	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0143 unit decrease	[0.0096-0.019]	LHX3	G	0.0601	0.0971	0.5369
creatinine	rs117998181	Sinnott-Armstrong et al. (2021)	C	3 x 10-13	0.0537 unit increase	[0.039-0.068]	PIP5K1B	C	0.1928	0.3126	0.5381
creatinine	rs62435145	Gorski et al. (2017)	T	3 x 10-8	0.0077 unit decrease	[0.0052-0.0102]	UNCX	G	0.0690	0.1124	0.5399
creatinine	rs10851885	Gorski et al. (2017)	A	3 x 10-12	0.0081 unit increase	[0.0059-0.0103]	NRG4	G	-0.0635	0.1049	0.5458
creatinine	rs34720381	Kanai et al. (2018)	NR	1 x 10-8	0.0417 unit increase	[0.027-0.056]	PRRC2C	T	0.1111	0.1847	0.5481
creatinine	rs11960179	Pattaro et al. (2016)	A	2 x 10-7	0.0069 unit decrease	[0.0044-0.0094]	'-	A	0.0912	0.1516	0.5482

creatinine	rs17257827	Graham et al. (2019)	G	3 x 10-10	0.055041 unit increase	[0.039-0.071]	'-	G	0.0912	0.1516	0.5482
creatinine	rs34895486	Sinnott-Armstrong et al. (2021)	C	1 x 10-17	0.0263 unit decrease	[0.02-0.032]	BCAS3	C	0.0848	0.1435	0.5552
creatinine	rs307558	Kanai et al. (2018)	NR	7 x 10-10	0.02628 unit decrease	[0.018-0.035]	SYN2	G	-0.0708	0.1202	0.5568
creatinine	rs7503383	Sinnott-Armstrong et al. (2021)	G	2 x 10-15	0.0342 unit increase	[0.026-0.043]	BCAS3	A	-0.0965	0.1646	0.5581
creatinine	rs112029703	Gorski et al. (2017)	A	1 x 10-9	0.0065 unit decrease	[0.0045-0.0085]	PTPN12	A	0.0639	0.1091	0.5591
creatinine	rs55748426	Sinnott-Armstrong et al. (2021)	C	5 x 10-10	0.0181 unit increase	[0.012-0.024]	ARMC9, PSMD1	C	0.0665	0.1144	0.5619
creatinine	rs72814468	Sinnott-Armstrong et al. (2021)	C	3 x 10-18	0.0316 unit decrease	[0.025-0.039]	BABAM2	C	0.0866	0.1498	0.5636
creatinine	rs836788	Pattaro et al. (2016)	T	1 x 10-7	0.0043 unit decrease	[0.0027-0.0059]	LINC01337	T	-0.0578	0.1003	0.5648
creatinine	rs80237806	Sinnott-Armstrong et al. (2021)	C	6 x 10-12	0.0403 unit increase	[0.029-0.052]	RAB24, MXD3	C	0.1497	0.2611	0.5671
creatinine	rs77883876	Sinnott-Armstrong et al. (2021)	C	1 x 10-9	0.0414 unit decrease	[0.028-0.055]	DHX40	C	0.2091	0.3667	0.5691
creatinine	rs74617384	Sinnott-Armstrong et al. (2021)	T	3 x 10-10	0.0283 unit increase	[0.019-0.037]	LPA	T	0.1078	0.1900	0.5711
creatinine	rs2576164	Sinnott-Armstrong et al. (2021)	C	3 x 10-10	0.0153 unit decrease	[0.011-0.02]	RNLS	C	-0.0575	0.1016	0.5720
creatinine	rs55733296	Sinnott-Armstrong et al. (2021)	A	8 x 10-52	0.0952 unit increase	[0.083-0.108]	DCDC1	A	-0.1543	0.2744	0.5746
creatinine	rs17876047	Sinnott-Armstrong et al. (2021)	A	4 x 10-11	0.0455 unit increase	[0.032-0.059]	F12, GRK6	A	-0.1507	0.2700	0.5773
creatinine	rs7213525	Rhee et al. (2013)	NR	6 x 10-6	0.14873344 unit decrease	[0.084-0.213]	NACA2, BRIP1	A	0.0564	0.1013	0.5787
creatinine	rs267733	Sinnott-Armstrong et al. (2021)	G	4 x 10-20	0.03 unit decrease	[0.024-0.036]	ANXA9	G	-0.0786	0.1414	0.5791
creatinine	rs12645890	Sinnott-Armstrong et al. (2021)	G	1 x 10-10	0.0165 unit increase	[0.011-0.022]	LINC02600, LINC02171	G	0.0544	0.0988	0.5825
creatinine	rs35259167	Sinnott-Armstrong et al. (2021)	A	9 x 10-14	0.0269 unit decrease	[0.02-0.034]	KLHDC7A	A	-0.0798	0.1451	0.5830
creatinine	rs11670056	Sinnott-Armstrong et al. (2021)	T	6 x 10-14	0.0343 unit increase	[0.025-0.043]	ELL	T	0.0958	0.1759	0.5868
creatinine	rs79091515	Sinnott-Armstrong et al. (2021)	A	4 x 10-24	0.0763 unit increase	[0.062-0.091]	RNF2	A	0.1851	0.3436	0.5906

creatinine	rs2071047	Pattaro et al. (2016)	A	3 x 10-6	0.0038 unit increase	[0.0022-0.0054]	BMP4	A	0.0537	0.0999	0.5917
creatinine	rs9806724	Sinnott-Armstrong et al. (2021)	C	6 x 10-22	0.0315 unit increase	[0.025-0.038]	C15orf48	C	-0.0725	0.1365	0.5960
creatinine	rs11604462	Gorski et al. (2017)	A	2 x 10-9	0.006 unit decrease	[0.0042-0.0078]	OVOL1, AP5B1	A	0.0568	0.1079	0.5992
creatinine	rs13317787	Stafford-Smith et al. (2015)	A	5 x 10-7	21.66 unit increase	[13.19-30.13]	LMCD1-AS1	A	-0.1206	0.2316	0.6031
creatinine	rs76476582	Sinnott-Armstrong et al. (2021)	T	5 x 10-12	0.0365 unit decrease	[0.026-0.047]	SNX17	T	0.0990	0.1903	0.6036
creatinine	rs6464165	Graham et al. (2019)	C	8 x 10-12	0.046266 unit increase	[0.034-0.058]	PRKAG2	C	-0.0591	0.1145	0.6061
creatinine	rs7123489	Kanai et al. (2018)	NR	2 x 10-9	0.03034 unit increase	[0.02-0.04]	AP5B1, KRT8P26	A	0.0552	0.1076	0.6086
creatinine	rs11042751	Sinnott-Armstrong et al. (2021)	C	2 x 10-12	0.0198 unit increase	[0.014-0.025]	IGF2	C	0.0593	0.1165	0.6116
creatinine	rs3127573	Chambers et al. (2010)	G	5 x 10-9	1.1 % increase	[0.8-1.4]	SLC22A2	G	0.0763	0.1514	0.6148
creatinine	rs3127573	Sinnott-Armstrong et al. (2021)	G	2 x 10-64	0.0593 unit increase	[0.052-0.066]	SLC22A2	G	0.0763	0.1514	0.6148
creatinine	rs2180314	Sinnott-Armstrong et al. (2021)	G	3 x 10-9	0.0143 unit increase	[0.0096-0.019]	GSTA2	C	-0.0492	0.0978	0.6155
creatinine	rs17001974	Kanai et al. (2018)	NR	2 x 10-13	0.02934 unit decrease	[0.022-0.037]	MRTFA	T	0.0971	0.1938	0.6168
creatinine	rs60394484	Sinnott-Armstrong et al. (2021)	A	2 x 10-14	0.0424 unit increase	[0.032-0.053]	OPLAH, EXOSC4	A	-0.1075	0.2185	0.6233
creatinine	rs13094687	Sinnott-Armstrong et al. (2021)	G	4 x 10-10	0.0162 unit decrease	[0.011-0.021]	PHF7	G	-0.0513	0.1053	0.6265
creatinine	rs2255293	Sinnott-Armstrong et al. (2021)	C	2 x 10-9	0.0177 unit decrease	[0.012-0.023]	MIR3681HG	T	0.0600	0.1232	0.6267
creatinine	rs3850625	Pattaro et al. (2016)	A	7 x 10-11	0.0083 unit increase	[NR]	CACNA1S	A	0.0731	0.1513	0.6294
creatinine	rs3850625	Gorski et al. (2017)	A	2 x 10-8	0.0088 unit increase	[0.0059-0.0117]	CACNA1S	A	0.0731	0.1513	0.6294
creatinine	rs76621572	Sinnott-Armstrong et al. (2021)	T	2 x 10-24	0.0677 unit decrease	[0.055-0.081]	PDILT	T	0.1413	0.2935	0.6306
creatinine	rs73080977	Sinnott-Armstrong et al. (2021)	T	1 x 10-12	0.0305 unit decrease	[0.022-0.039]	SEMA3F-AS1	T	0.0875	0.1828	0.6326
creatinine	rs9788550	Sinnott-Armstrong et al. (2021)	C	4 x 10-9	0.0165 unit decrease	[0.011-0.022]	'-	C	0.0538	0.1134	0.6359

creatinine	rs115137643	Sinnott-Armstrong et al. (2021)	T	3 x 10-9	0.0507 unit increase	[0.034-0.068]	STBD1, FAM47E-STBD1	T	-0.1658	0.3531	0.6392
creatinine	rs5030873	Graham et al. (2019)	C	1 x 10-20	0.061138 unit increase	[0.049-0.073]	SLC34A1	C	0.0466	0.0993	0.6396
creatinine	rs6420094	Köttgen et al. (2010)	G	1 x 10-14	0.01 unit decrease	[0.007-0.015]	SLC34A1	G	0.0466	0.0993	0.6396
creatinine	rs6420094	Pattaro et al. (2016)	A	5 x 10-22	0.0096 unit increase	[0.0076-0.0116]	SLC34A1	G	0.0466	0.0993	0.6396
creatinine	rs1888357	Rhee et al. (2013)	NR	9 x 10-6	0.16882975 unit decrease	[0.094-0.243]	OBI1-AS1	C	-0.0477	0.1018	0.6401
creatinine	rs10821826	Sinnott-Armstrong et al. (2021)	G	6 x 10-17	0.0279 unit increase	[0.021-0.034]	ASAH2B	A	-0.0666	0.1424	0.6406
creatinine	rs41423644	Sinnott-Armstrong et al. (2021)	C	5 x 10-19	0.0405 unit increase	[0.032-0.049]	TSPAN9	C	-0.0818	0.1756	0.6415
creatinine	rs72801433	Sinnott-Armstrong et al. (2021)	G	2 x 10-13	0.0359 unit increase	[0.026-0.046]	ZCCHC10	G	0.0955	0.2060	0.6433
creatinine	rs4014195	Köttgen et al. (2010)	G	1 x 10-7	0.01 unit decrease	[0.006-0.010]	AP5B1, KRT8P26	G	0.0491	0.1067	0.6463
creatinine	rs4014195	Pattaro et al. (2016)	C	1 x 10-11	0.0055 unit increase	[0.0039-0.0071]	AP5B1, KRT8P26	G	0.0491	0.1067	0.6463
creatinine	rs4014195	Pattaro et al. (2016)	C	3 x 10-12	0.005 unit increase	[NR]	AP5B1, KRT8P26	G	0.0491	0.1067	0.6463
creatinine	rs16909119	Rhee et al. (2013)	NR	5 x 10-6	0.37830615 unit decrease	[0.22-0.54]	FAM135B	A	0.0932	0.2034	0.6473
creatinine	rs8068318	Chambers et al. (2010)	G	2 x 10-8	0.8 % increase	[0.6-1.0]	TBX2, TBX2-AS1	C	0.0515	0.1126	0.6478
creatinine	rs80282103	Gorski et al. (2017)	A	1 x 10-11	0.0123 unit increase	[0.009-0.0156]	LARP4B	T	-0.0818	0.1790	0.6480
creatinine	rs79513925	Sinnott-Armstrong et al. (2021)	A	9 x 10-16	0.0292 unit decrease	[0.022-0.036]	TFDP2	A	-0.0644	0.1413	0.6492
creatinine	rs17319721	Pattaro et al. (2016)	A	1 x 10-37	0.0114 unit decrease	[0.0096-0.0132]	SHROOM3	A	0.0456	0.1009	0.6517
creatinine	rs17319721	Köttgen et al. (2010)	A	1 x 10-19	NR	NR	SHROOM3	A	0.0456	0.1009	0.6517
creatinine	rs17319721	Pattaro et al. (2016)	A	5 x 10-35	0.0113 unit decrease	[0.0095-0.0131]	SHROOM3	A	0.0456	0.1009	0.6517
creatinine	rs72681869	Sinnott-Armstrong et al. (2021)	C	2 x 10-16	0.0957 unit decrease	[0.073-0.118]	SOS¬†2	C	-0.1582	0.3513	0.6529
creatinine	rs13296176	Sinnott-Armstrong et al. (2021)	C	6 x 10-10	0.0239 unit decrease	[0.016-0.032]	B4GALT1	C	-0.0774	0.1725	0.6543

creatinine	rs115030251	Sinnott-Armstrong et al. (2021)	T	4 x 10-13	0.0253 unit increase	[0.018-0.032]	MYBPHL	T	-0.0684	0.1529	0.6550
creatinine	rs7999846	Sinnott-Armstrong et al. (2021)	T	2 x 10-11	0.0302 unit decrease	[0.021-0.039]	LINC02340	T	-0.0915	0.2045	0.6551
creatinine	rs10865190	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0176 unit decrease	[0.012-0.023]	ZFP36L2, LINC02580	T	0.0562	0.1258	0.6557
creatinine	rs11747993	Sinnott-Armstrong et al. (2021)	A	5 x 10-11	0.0181 unit increase	[0.013-0.023]	SLC6A19, CTD-3080P12.3	A	0.0518	0.1170	0.6587
creatinine	rs79675564	Sinnott-Armstrong et al. (2021)	A	1 x 10-12	0.0318 unit increase	[0.023-0.041]	LANCL1-AS1	A	-0.0869	0.1966	0.6589
creatinine	rs11602582	Sinnott-Armstrong et al. (2021)	A	2 x 10-11	0.0382 unit increase	[0.027-0.049]	DCDC1	A	-0.1028	0.2332	0.6598
creatinine	rs62412107	Nagy et al. (2017)	A	2 x 10-8	0.15169783 mg/dl increase	[0.099-0.205]	MIR548I2, OR7E83P	A	0.1035	0.2349	0.6599
creatinine	rs70953677	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0472 unit increase	[0.032-0.063]	SLC22A7	T	-0.1078	0.2459	0.6617
creatinine	rs8121155	Sinnott-Armstrong et al. (2021)	C	4 x 10-9	0.0282 unit increase	[0.019-0.038]	ZBTB46, C20orf181	C	0.0822	0.1876	0.6618
creatinine	rs1508442	Rhee et al. (2013)	NR	1 x 10-6	0.16735528 unit increase	[0.099-0.235]	LAMA2, Y_RNA	T	0.0445	0.1021	0.6632
creatinine	rs28698773	Sinnott-Armstrong et al. (2021)	C	7 x 10-18	0.0324 unit decrease	[0.025-0.04]	DAB2	C	-0.0654	0.1512	0.6656
creatinine	rs724950	Sinnott-Armstrong et al. (2021)	C	3 x 10-12	0.0166 unit decrease	[0.012-0.021]	'-	C	-0.0428	0.0990	0.6663
creatinine	rs848490	Pattaro et al. (2016)	C	8 x 10-13	0.0073 unit increase	[0.0053-0.0093]	PHTF2	G	0.0477	0.1123	0.6714
creatinine	rs848490	Pattaro et al. (2016)	C	1 x 10-12	0.0074 unit increase	[0.0054-0.0094]	PHTF2	G	0.0477	0.1123	0.6714
creatinine	rs6421983	Sinnott-Armstrong et al. (2021)	T	4 x 10-9	0.0143 unit increase	[0.0096-0.019]	IFITM3	T	0.0418	0.1002	0.6773
creatinine	rs9962915	Gorski et al. (2017)	T	7 x 10-9	0.0055 unit decrease	[0.0035-0.0075]	EPB41L3	T	-0.0397	0.0959	0.6791
creatinine	rs151245	Sinnott-Armstrong et al. (2021)	T	8 x 10-16	0.0197 unit increase	[0.015-0.024]	AQP4-AS1	G	-0.0402	0.0979	0.6819
creatinine	rs2050605	Rhee et al. (2013)	NR	9 x 10-6	0.1742692 unit decrease	[0.097-0.251]	'-	T	0.0481	0.1179	0.6836
creatinine	rs9996493	Sinnott-Armstrong et al. (2021)	G	2 x 10-11	0.0196 unit increase	[0.014-0.025]	SHROOM3	G	0.0483	0.1200	0.6879
creatinine	rs75772464	Sinnott-Armstrong et al. (2021)	C	2 x 10-9	0.0317 unit increase	[0.022-0.042]	SNUPN	C	0.0903	0.2272	0.6915

creatinine	rs56087592	Sinnott-Armstrong et al. (2021)	T	2 x 10-14	0.0421 unit increase	[0.031-0.053]	SHROOM3	T	-0.0893	0.2270	0.6944
creatinine	rs41271951	Sinnott-Armstrong et al. (2021)	G	7 x 10-23	0.0427 unit decrease	[0.034-0.051]	CTSS	G	-0.0688	0.1771	0.6982
creatinine	rs2279463	Graham et al. (2019)	G	1 x 10-14	0.071368 unit increase	[0.055-0.088]	SLC22A2	G	0.0580	0.1502	0.6998
creatinine	rs2279463	Pattaro et al. (2016)	A	7 x 10-18	0.0119 unit increase	[0.0092-0.0146]	SLC22A2	G	0.0580	0.1502	0.6998
creatinine	rs2279463	Gorski et al. (2017)	A	1 x 10-15	0.0118 unit increase	[0.0091-0.0145]	SLC22A2	G	0.0580	0.1502	0.6998
creatinine	rs2279463	Köttgen et al. (2010)	G	6 x 10-12	0.01 unit decrease	[0.009-0.017]	SLC22A2	G	0.0580	0.1502	0.6998
creatinine	rs84178	Gorski et al. (2017)	A	4 x 10-9	0.0078 unit decrease	[0.0054-0.0102]	KCNQ1	A	-0.0533	0.1389	0.7019
creatinine	rs12136063	Pattaro et al. (2016)	A	5 x 10-8	0.0045 unit increase	[0.0029-0.0061]	SYPL2	G	-0.0416	0.1086	0.7022
creatinine	rs4690095	Kanai et al. (2018)	NR	9 x 10-11	0.02386 unit increase	[0.017-0.031]	RGS12	T	0.0391	0.1022	0.7023
creatinine	rs12592862	Sinnott-Armstrong et al. (2021)	T	3 x 10-28	0.0657 unit increase	[0.054-0.077]	SLC30A4, C15orf48	T	0.0871	0.2277	0.7026
creatinine	rs11706052	Sinnott-Armstrong et al. (2021)	G	2 x 10-13	0.0285 unit decrease	[0.021-0.036]	IMPDH2	G	-0.0619	0.1628	0.7041
creatinine	rs10774021	Köttgen et al. (2010)	C	1 x 10-9	1.05 unit increase	[0.006-0.010]	SLC6A13	C	-0.0391	0.1033	0.7054
creatinine	rs10774021	Pattaro et al. (2016)	T	5 x 10-12	0.0063 unit decrease	[0.0045-0.0081]	SLC6A13	C	-0.0391	0.1033	0.7054
creatinine	rs10774021	Pattaro et al. (2016)	T	1 x 10-12	0.0067 unit decrease	[0.0049-0.0085]	SLC6A13	C	-0.0391	0.1033	0.7054
creatinine	rs6060139	Graham et al. (2019)	C	9 x 10-9	0.03545 unit increase	[0.024-0.046]	MYH7B	T	0.0373	0.0986	0.7055
creatinine	rs2738787	Sinnott-Armstrong et al. (2021)	G	1 x 10-11	0.0296 unit decrease	[0.021-0.038]	RTEL1-TNFRSF6B, TNFRSF6B	A	0.0645	0.1735	0.7102
creatinine	rs34209642	Sinnott-Armstrong et al. (2021)	A	4 x 10-41	0.0413 unit decrease	[0.035-0.047]	DAB2	A	-0.0471	0.1273	0.7120
creatinine	rs71359461	Gorski et al. (2017)	C	4 x 10-10	0.0086 unit decrease	[0.0061-0.0111]	NFATC1	C	-0.0377	0.1022	0.7126
creatinine	rs1275609	Kanai et al. (2018)	NR	1 x 10-12	0.02821 unit decrease	[0.02-0.036]	RN7SL734P	A	-0.0358	0.0981	0.7156
creatinine	rs72708294	Sinnott-Armstrong et al. (2021)	A	1 x 10-10	0.046 unit increase	[0.032-0.06]	PMF1, PMF1-BGLAP	A	-0.0932	0.2598	0.7201

creatinine	rs10277115	Pattaro et al. (2016)	A	2 x 10-14	0.0084 unit increase	[NR]	UNCX	A	-0.0441	0.1232	0.7210
creatinine	rs10277115	Pattaro et al. (2016)	A	9 x 10-14	0.009 unit increase	[0.0066-0.0114]	UNCX	A	-0.0441	0.1232	0.7210
creatinine	rs2955742	Sinnott-Armstrong et al. (2021)	A	5 x 10-21	0.0299 unit increase	[0.024-0.036]	TMEM266	A	-0.0454	0.1278	0.7226
creatinine	rs11901633	Sinnott-Armstrong et al. (2021)	C	2 x 10-12	0.0209 unit increase	[0.015-0.027]	'-	C	-0.0432	0.1224	0.7243
creatinine	rs73167017	Sinnott-Armstrong et al. (2021)	A	3 x 10-12	0.0378 unit decrease	[0.027-0.048]	ADSL, SGSM3, SGSM3-AS1	A	-0.0995	0.2828	0.7252
creatinine	rs1394125	Sinnott-Armstrong et al. (2021)	A	5 x 10-55	0.0387 unit increase	[0.034-0.044]	UBE2Q2	A	0.0351	0.0999	0.7257
creatinine	rs1394125	Pattaro et al. (2016)	A	5 x 10-14	0.0073 unit decrease	[0.0053-0.0093]	UBE2Q2	A	0.0351	0.0999	0.7257
creatinine	rs1394125	Köttgen et al. (2010)	A	3 x 10-17	0.01 unit decrease	[0.007-0.011]	UBE2Q2	A	0.0351	0.0999	0.7257
creatinine	rs1394125	Pattaro et al. (2016)	A	6 x 10-13	0.0072 unit decrease	[0.0052-0.0092]	UBE2Q2	A	0.0351	0.0999	0.7257
creatinine	rs780093	Gorski et al. (2017)	T	2 x 10-16	0.0081 unit increase	[0.0063-0.0099]	GCKR	T	0.0348	0.1007	0.7301
creatinine	rs836968	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0162 unit decrease	[0.011-0.021]	FAIM2	T	-0.0393	0.1164	0.7358
creatinine	rs2467853	Pattaro et al. (2016)	T	1 x 10-42	0.0126 unit increase	[0.011-0.014]	SPATA5L1	G	-0.0334	0.1007	0.7406
creatinine	rs2467853	Graham et al. (2019)	G	1 x 10-26	0.066702 unit increase	[0.056-0.078]	SPATA5L1	G	-0.0334	0.1007	0.7406
creatinine	rs10791821	Sinnott-Armstrong et al. (2021)	A	1 x 10-9	0.0165 unit decrease	[0.011-0.022]	MAP3K11	A	0.0347	0.1060	0.7440
creatinine	rs62025168	Sinnott-Armstrong et al. (2021)	A	2 x 10-44	0.043 unit decrease	[0.037-0.049]	RNU6-953P, GATM	A	-0.0399	0.1233	0.7467
creatinine	rs9369305	Sinnott-Armstrong et al. (2021)	T	1 x 10-9	0.0189 unit increase	[0.013-0.025]	TFEB	T	0.0412	0.1276	0.7474
creatinine	rs491567	Pattaro et al. (2016)	A	1 x 10-12	0.0078 unit decrease	[0.0056-0.01]	WDR72	C	0.0407	0.1266	0.7483
creatinine	rs491567	Köttgen et al. (2010)	C	3 x 10-13	0.01 unit increase	[0.005-0.013]	WDR72	C	0.0407	0.1266	0.7483
creatinine	rs491567	Pattaro et al. (2016)	A	3 x 10-15	0.0084 unit decrease	[0.0064-0.0104]	WDR72	C	0.0407	0.1266	0.7483
creatinine	rs6068816	Sinnott-Armstrong et al. (2021)	T	3 x 10-11	0.0258 unit decrease	[0.018-0.033]	CYP24A1	T	0.0530	0.1665	0.7505

creatinine	rs10513801	Pattaro et al. (2016)	T	1 x 10-9	0.0072 unit increase	[NR]	ETV5	G	-0.0422	0.1333	0.7521
creatinine	rs6809651	Gorski et al. (2017)	A	2 x 10-8	0.0081 unit decrease	[0.0054-0.0108]	ETV5	A	-0.0422	0.1333	0.7521
creatinine	rs2453580	Pattaro et al. (2016)	T	3 x 10-11	0.0064 unit increase	[0.0046-0.0082]	SLC47A1	C	-0.0307	0.0978	0.7539
creatinine	rs2453580	Pattaro et al. (2016)	T	3 x 10-13	0.0073 unit increase	[0.0053-0.0093]	SLC47A1	C	-0.0307	0.0978	0.7539
creatinine	rs894680	Gorski et al. (2017)	A	5 x 10-12	0.0074 unit decrease	[0.0054-0.0094]	SLC47A1	A	-0.0307	0.0978	0.7539
creatinine	rs6026578	Kanai et al. (2018)	NR	3 x 10-10	0.02583 unit decrease	[0.018-0.034]	GNAS	C	-0.0310	0.1002	0.7575
creatinine	rs9895661	Sinnott-Armstrong et al. (2021)	T	3 x 10-100	0.0664 unit decrease	[0.06-0.072]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs9895661	Gorski et al. (2017)	T	4 x 10-21	0.0125 unit increase	[0.01-0.015]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs9895661	Pattaro et al. (2016)	T	3 x 10-22	0.0121 unit increase	[0.0097-0.0145]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs9895661	Kanai et al. (2018)	NR	2 x 10-25	0.04348 unit decrease	[0.035-0.052]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs9895661	Köttgen et al. (2010)	C	1 x 10-15	0.01 unit decrease	[0.007-0.015]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs9895661	Hishida et al. (2018)	T	2 x 10-11	0.0108 unit decrease	[0.0081-0.0135]	BCAS3	C	0.0400	0.1299	0.7585
creatinine	rs13016086	Sinnott-Armstrong et al. (2021)	C	3 x 10-14	0.0285 unit increase	[0.021-0.036]	BABAM2	C	0.0518	0.1721	0.7636
creatinine	rs61303167	Sinnott-Armstrong et al. (2021)	T	5 x 10-11	0.0209 unit decrease	[0.015-0.027]	STYXL1	T	-0.0383	0.1284	0.7659
creatinine	rs115604285	Sinnott-Armstrong et al. (2021)	T	1 x 10-15	0.0594 unit increase	[0.045-0.074]	TFDP2	T	0.0818	0.2810	0.7714
creatinine	rs13077498	Sinnott-Armstrong et al. (2021)	T	2 x 10-13	0.0283 unit decrease	[0.021-0.036]	C3orf62	T	-0.0473	0.1631	0.7722
creatinine	rs7948458	Sinnott-Armstrong et al. (2021)	C	5 x 10-17	0.0253 unit increase	[0.019-0.031]	INS-IGF2	A	0.0380	0.1366	0.7809
creatinine	rs3770636	Sinnott-Armstrong et al. (2021)	G	5 x 10-22	0.094 unit decrease	[0.075-0.113]	LRP2	G	0.1175	0.4230	0.7814
creatinine	rs73688224	Sinnott-Armstrong et al. (2021)	G	3 x 10-10	0.0442 unit increase	[0.03-0.058]	LINC01449, LINC01450	G	0.0777	0.2802	0.7819
creatinine	rs1933182	Köttgen et al. (2010)	A	1 x 10-7	0.01 unit decrease	[0.006-0.010]	SYPL2, PSMA5	A	-0.0294	0.1084	0.7866

creatinine	rs10994856	Gorski et al. (2017)	A	5 x 10-9	0.0075 unit increase	[0.0051-0.0099]	A1CF	A	0.0316	0.1182	0.7894
creatinine	rs10994860	Pattaro et al. (2016)	T	1 x 10-12	0.0077 unit increase	[NR]	A1CF	T	0.0316	0.1182	0.7894
creatinine	rs76578497	Sinnott-Armstrong et al. (2021)	G	2 x 10-22	0.087 unit increase	[0.07-0.104]	RNF112, MFAP4	G	0.0958	0.3653	0.7933
creatinine	rs6464772	Williams et al. (2015)	NR	4 x 10-6	NR	NR	MKRN1, RAB19	A	0.0266	0.1021	0.7950
creatinine	rs626277	Pattaro et al. (2016)	A	1 x 10-7	0.0049 unit decrease	[0.0031-0.0067]	DACH1	C	-0.0269	0.1035	0.7955
creatinine	rs626277	Köttgen et al. (2010)	C	3 x 10-11	0.01 unit increase	[0.007-0.011]	DACH1	C	-0.0269	0.1035	0.7955
creatinine	rs716877	Kanai et al. (2018)	NR	4 x 10-13	0.03724 unit increase	[0.027-0.047]	DACH1	C	-0.0269	0.1035	0.7955
creatinine	rs716877	Pattaro et al. (2016)	C	6 x 10-8	0.0049 unit increase	[0.0031-0.0067]	DACH1	C	-0.0269	0.1035	0.7955
creatinine	rs35411989	Sinnott-Armstrong et al. (2021)	T	2 x 10-11	0.0159 unit increase	[0.011-0.021]	WDR1	T	0.0260	0.1009	0.7970
creatinine	rs6503496	Sinnott-Armstrong et al. (2021)	T	8 x 10-10	0.0362 unit increase	[0.025-0.048]	STAC2	C	-0.0683	0.2660	0.7976
creatinine	rs9945126	Sinnott-Armstrong et al. (2021)	G	1 x 10-14	0.0187 unit decrease	[0.014-0.023]	SMAD7	C	-0.0256	0.1008	0.8000
creatinine	rs12458009	Gorski et al. (2017)	T	3 x 10-8	0.0064 unit decrease	[0.004-0.0088]	LINC01544	G	0.0342	0.1347	0.8001
creatinine	rs1260326	Pattaro et al. (2016)	T	3 x 10-14	0.0068 unit increase	[0.005-0.0086]	GCKR	T	0.0253	0.1014	0.8029
creatinine	rs1260326	Pattaro et al. (2016)	T	2 x 10-12	0.0065 unit increase	[0.0047-0.0083]	GCKR	T	0.0253	0.1014	0.8029
creatinine	rs1260326	Köttgen et al. (2010)	T	3 x 10-14	0.01 unit increase	[0.007-0.011]	GCKR	T	0.0253	0.1014	0.8029
creatinine	rs35925637	Kanai et al. (2018)	NR	4 x 10-9	0.02148 unit decrease	[0.014-0.029]	TNP1, FABP5P14	A	0.0254	0.1019	0.8033
creatinine	rs1044261	Pattaro et al. (2016)	T	1 x 10-11	0.0113 unit decrease	[0.0082-0.0144]	IDI2, GTPBP4	T	-0.0455	0.1839	0.8047
creatinine	rs1044261	Sinnott-Armstrong et al. (2021)	T	3 x 10-33	0.0545 unit increase	[0.046-0.063]	IDI2, GTPBP4	T	-0.0455	0.1839	0.8047
creatinine	rs1051978	Sinnott-Armstrong et al. (2021)	A	7 x 10-18	0.0317 unit decrease	[0.024-0.039]	NFATC1	A	-0.0338	0.1397	0.8088
creatinine	rs11097396	Sinnott-Armstrong et al. (2021)	G	6 x 10-37	0.0347 unit decrease	[0.029-0.04]	SHROOM3	G	0.0268	0.1140	0.8142

creatinine	rs10127790	Gorski et al. (2017)	T	8 x 10-9	0.0061 unit increase	[0.0041-0.0081]	SORT1	C	0.0251	0.1080	0.8164
creatinine	rs75459462	Sinnott-Armstrong et al. (2021)	A	3 x 10-28	0.042 unit increase	[0.035-0.049]	DAB2, C9	A	-0.0381	0.1654	0.8179
creatinine	rs780094	Sinnott-Armstrong et al. (2021)	C	8 x 10-75	0.0449 unit increase	[0.04-0.05]	'-	T	0.0232	0.1009	0.8186
creatinine	rs10874312	Gorski et al. (2017)	A	2 x 10-8	0.0057 unit decrease	[0.0035-0.0079]	'-	G	0.0216	0.0960	0.8220
creatinine	rs10178675	Sinnott-Armstrong et al. (2021)	G	6 x 10-10	0.0224 unit decrease	[0.015-0.029]	UNC80	G	-0.0331	0.1537	0.8299
creatinine	rs67523949	Graham et al. (2019)	T	2 x 10-8	0.03473 unit increase	[0.024-0.046]	SLC6A13	C	-0.0223	0.1041	0.8303
creatinine	rs932046	Sinnott-Armstrong et al. (2021)	T	4 x 10-15	0.0669 unit increase	[0.05-0.084]	RN7SL278P, RCN2	C	0.0650	0.3033	0.8306
creatinine	rs13298297	Gorski et al. (2017)	A	2 x 10-8	0.0075 unit decrease	[0.0048-0.0102]	ASTN2	A	-0.0231	0.1083	0.8316
creatinine	rs2789047	Van Driest et al. (2015)	A	1 x 10-7	0.053 unit decrease	[0.033-0.073]	COX6A1P3	A	0.0242	0.1137	0.8318
creatinine	rs10518732	Kanai et al. (2018)	NR	3 x 10-34	0.0452 unit decrease	[0.038-0.052]	WDR72	C	0.0255	0.1204	0.8329
creatinine	rs75834729	Kanai et al. (2018)	NR	2 x 10-9	0.02413 unit decrease	[0.016-0.032]	CCDC26	T	0.0445	0.2123	0.8343
creatinine	rs7121082	Sinnott-Armstrong et al. (2021)	A	2 x 10-12	0.0221 unit decrease	[0.016-0.028]	OR52H2P, OR52B5P	A	0.0270	0.1303	0.8361
creatinine	rs78844280	Sinnott-Armstrong et al. (2021)	A	2 x 10-11	0.0549 unit increase	[0.039-0.071]	'-	A	0.0676	0.3286	0.8372
creatinine	rs115671087	Sinnott-Armstrong et al. (2021)	A	2 x 10-10	0.0403 unit increase	[0.028-0.053]	CCDC158	A	-0.0576	0.2814	0.8381
creatinine	rs7177266	Kanai et al. (2018)	NR	1 x 10-11	0.02833 unit increase	[0.02-0.037]	UBE2Q2, FBXO22	C	-0.0208	0.1024	0.8392
creatinine	rs72668656	Sinnott-Armstrong et al. (2021)	A	3 x 10-12	0.0197 unit decrease	[0.014-0.025]	LINC02428	A	-0.0238	0.1170	0.8394
creatinine	rs9945268	Pattaro et al. (2016)	A	3 x 10-6	0.0042 unit decrease	[0.0024-0.006]	LINC01544	T	-0.0236	0.1172	0.8406
creatinine	rs1050274	Sinnott-Armstrong et al. (2021)	A	2 x 10-20	0.0237 unit increase	[0.019-0.029]	KNG1	A	-0.0200	0.1014	0.8437
creatinine	rs41310885	Sinnott-Armstrong et al. (2021)	A	3 x 10-19	0.0417 unit decrease	[0.032-0.051]	MINDY1	A	-0.0399	0.2040	0.8452
creatinine	rs757608	Sinnott-Armstrong et al. (2021)	G	3 x 10-27	0.0273 unit decrease	[0.022-0.032]	TBX4, LINC02875	A	-0.0205	0.1068	0.8479

creatinine	rs13329952	Pattaro et al. (2016)	T	9 x 10-43	0.0158 unit decrease	[0.014-0.018]	UMOD	C	-0.0221	0.1181	0.8518
creatinine	rs79972752	Sinnott-Armstrong et al. (2021)	T	4 x 10-20	0.0398 unit decrease	[0.031-0.048]	UBE2Q2, DNM1P49	T	0.0307	0.1641	0.8519
creatinine	rs2585431	Sinnott-Armstrong et al. (2021)	C	2 x 10-10	0.0165 unit increase	[0.011-0.022]	CYP24A1	T	-0.0179	0.0965	0.8530
creatinine	rs2762943	Graham et al. (2019)	G	1 x 10-8	0.065065 unit increase	[0.045-0.085]	PFDN4, CYP24A1	T	0.0340	0.1895	0.8578
creatinine	rs2762943	Sinnott-Armstrong et al. (2021)	G	4 x 10-17	0.0382 unit increase	[0.029-0.047]	PFDN4, CYP24A1	T	0.0340	0.1895	0.8578
creatinine	rs7247977	Gorski et al. (2017)	T	2 x 10-12	0.007 unit decrease	[0.0052-0.0088]	SLC7A9	C	0.0186	0.1041	0.8582
creatinine	rs7247977	Kanai et al. (2018)	NR	1 x 10-8	0.02202 unit decrease	[0.014-0.03]	SLC7A9	C	0.0186	0.1041	0.8582
creatinine	rs7805747	Pattaro et al. (2016)	A	8 x 10-29	0.013 unit decrease	[0.011-0.015]	PRKAG2	A	-0.0205	0.1162	0.8605
creatinine	rs7805747	Pattaro et al. (2016)	A	2 x 10-29	0.0136 unit decrease	[0.011-0.016]	PRKAG2	A	-0.0205	0.1162	0.8605
creatinine	rs7805747	Sinnott-Armstrong et al. (2021)	A	6 x 10-122	0.0626 unit increase	[0.057-0.068]	PRKAG2	A	-0.0205	0.1162	0.8605
creatinine	rs79604958	Sinnott-Armstrong et al. (2021)	C	6 x 10-10	0.0324 unit increase	[0.022-0.043]	IMP3, SNUPN	C	-0.0367	0.2114	0.8624
creatinine	rs4371638	Sinnott-Armstrong et al. (2021)	C	4 x 10-24	0.0255 unit decrease	[0.021-0.03]	SHROOM3	T	-0.0168	0.0975	0.8634
creatinine	rs34823813	Sinnott-Armstrong et al. (2021)	A	2 x 10-13	0.0292 unit decrease	[0.021-0.037]	RNF123	A	-0.0276	0.1613	0.8641
creatinine	rs16856823	Kanai et al. (2018)	NR	3 x 10-25	0.04923 unit decrease	[0.04-0.059]	LRP2	T	-0.0661	0.3917	0.8661
creatinine	rs11120093	Sinnott-Armstrong et al. (2021)	T	8 x 10-15	0.0189 unit increase	[0.014-0.024]	PFKFB2	T	-0.0164	0.0979	0.8673
creatinine	rs79309321	Sinnott-Armstrong et al. (2021)	G	1 x 10-9	0.0398 unit decrease	[0.027-0.053]	TFDP2	G	0.0395	0.2433	0.8713
creatinine	rs2352039	Stafford-Smith et al. (2015)	A	2 x 10-6	8.9 unit increase	[5.2-12.6]	PTGFR, MGC27382	T	-0.0220	0.1357	0.8716
creatinine	rs11062167	Gorski et al. (2017)	A	1 x 10-8	0.0055 unit decrease	[0.0037-0.0073]	SLC6A13	G	-0.0166	0.1031	0.8725
creatinine	rs10491967	Pattaro et al. (2016)	A	5 x 10-14	0.0095 unit decrease	[0.007-0.012]	TSPAN9	A	-0.0271	0.1686	0.8725
creatinine	rs77924615	Gorski et al. (2017)	A	5 x 10-40	0.0176 unit increase	[0.015-0.02]	PDILT	A	-0.0198	0.1258	0.8750

creatinine	rs77924615	Graham et al. (2019)	A	2 x 10-16	0.06473 unit decrease	[0.051-0.079]	PDILT	A	-0.0198	0.1258	0.8750
creatinine	rs77924615	Kanai et al. (2018)	NR	2 x 10-53	0.06802 unit decrease	[0.059-0.077]	PDILT	A	-0.0198	0.1258	0.8750
creatinine	rs66464034	Sinnott-Armstrong et al. (2021)	G	8 x 10-14	0.0274 unit decrease	[0.02-0.035]	ADAMTSL4-AS2, FALEC	G	0.0238	0.1513	0.8751
creatinine	rs112068790	Sinnott-Armstrong et al. (2021)	C	4 x 10-15	0.0556 unit decrease	[0.042-0.07]	SPEG	C	-0.0436	0.2837	0.8780
creatinine	rs8101881	Graham et al. (2019)	T	1 x 10-12	0.045327 unit increase	[0.034-0.057]	SLC7A9, CEP89	C	0.0160	0.1043	0.8785
creatinine	rs35259333	Sinnott-Armstrong et al. (2021)	G	3 x 10-11	0.0455 unit increase	[0.032-0.059]	TNK2	G	0.0465	0.3056	0.8791
creatinine	rs10254101	Gorski et al. (2017)	T	6 x 10-20	0.0104 unit decrease	[0.0082-0.0126]	PRKAG2	T	-0.0175	0.1147	0.8792
creatinine	rs73488277	Sinnott-Armstrong et al. (2021)	T	5 x 10-13	0.0254 unit increase	[0.019-0.032]	SHH	T	-0.0207	0.1378	0.8807
creatinine	rs16940897	Sinnott-Armstrong et al. (2021)	T	4 x 10-10	0.0275 unit increase	[0.019-0.036]	SLC28A2, H3P39	T	-0.0276	0.1847	0.8813
creatinine	rs17050272	Pattaro et al. (2016)	A	1 x 10-7	0.0043 unit decrease	[0.0027-0.0059]	LINC01101	A	-0.0149	0.1003	0.8823
creatinine	rs2712184	Pattaro et al. (2016)	A	1 x 10-10	0.0053 unit decrease	[NR]	FABP5P14, TNP1	C	0.0148	0.1037	0.8864
creatinine	rs6119593	Sinnott-Armstrong et al. (2021)	A	2 x 10-11	0.0228 unit increase	[0.016-0.029]	MMP24, MMP24OS	A	-0.0196	0.1390	0.8879
creatinine	rs3731909	Sinnott-Armstrong et al. (2021)	G	3 x 10-21	0.0234 unit increase	[0.018-0.028]	ASIC4, ASIC4-AS1	C	0.0148	0.1052	0.8882
creatinine	rs1533988	Kanai et al. (2018)	NR	1 x 10-37	0.0572 unit increase	[0.048-0.066]	UNCX	A	0.0174	0.1251	0.8894
creatinine	rs10479001	Sinnott-Armstrong et al. (2021)	T	3 x 10-10	0.0367 unit increase	[0.025-0.048]	PDLIM4, P4HA2	T	0.0339	0.2443	0.8898
creatinine	rs6715026	Sinnott-Armstrong et al. (2021)	C	5 x 10-11	0.0164 unit increase	[0.012-0.021]	'-	C	-0.0155	0.1122	0.8903
creatinine	rs17206198	Sinnott-Armstrong et al. (2021)	G	3 x 10-15	0.0273 unit decrease	[0.02-0.034]	TDRD12	G	-0.0178	0.1292	0.8908
creatinine	rs2453533	Köttgen et al. (2010)	NR	5 x 10-22	NR	NR	SLC28A2, RNU6-953P	A	-0.0135	0.1014	0.8943
creatinine	rs2453533	Gorski et al. (2017)	A	3 x 10-43	0.0135 unit decrease	[0.012-0.015]	SLC28A2, RNU6-953P	A	-0.0135	0.1014	0.8943
creatinine	rs2453533	Pattaro et al. (2016)	A	5 x 10-41	0.0125 unit decrease	[0.011-0.014]	SLC28A2, RNU6-953P	A	-0.0135	0.1014	0.8943

creatinine	rs2541381	Gorski et al. (2017)	NR	2 x 10-6	NR	NR	FABP5P14, TNP1	G	-0.0129	0.1019	0.8990
creatinine	rs7764488	Gorski et al. (2017)	A	4 x 10-9	0.0061 unit increase	[0.0039-0.0083]	EYA4	A	-0.0132	0.1049	0.9001
creatinine	rs17380173	Rhee et al. (2013)	NR	2 x 10-7	0.5900155 unit decrease	[0.37-0.81]	Y_RNA	T	0.0223	0.1790	0.9009
creatinine	rs6676197	Sinnott-Armstrong et al. (2021)	G	2 x 10-9	0.0143 unit decrease	[0.0096-0.019]	RTCA, CDC14A	A	-0.0116	0.0951	0.9030
creatinine	rs12917707	Pattaro et al. (2016)	T	2 x 10-8	0.0266 unit increase	[NR]	PDILT, UMOD	T	-0.0145	0.1212	0.9051
creatinine	rs12917707	Köttgen et al. (2010)	T	1 x 10-20	NR	NR	PDILT, UMOD	T	-0.0145	0.1212	0.9051
creatinine	rs12917707	Sinnott-Armstrong et al. (2021)	T	6 x 10-130	0.0757 unit decrease	[0.07-0.082]	PDILT, UMOD	T	-0.0145	0.1212	0.9051
creatinine	rs12917707	Pattaro et al. (2016)	T	5 x 10-36	0.0152 unit increase	[0.013-0.018]	PDILT, UMOD	T	-0.0145	0.1212	0.9051
creatinine	rs35050898	Sinnott-Armstrong et al. (2021)	T	6 x 10-10	0.0247 unit increase	[0.017-0.033]	UBBP1	T	-0.0177	0.1523	0.9076
creatinine	rs111239279	Sinnott-Armstrong et al. (2021)	C	3 x 10-23	0.0907 unit decrease	[0.073-0.109]	SHH	C	0.0638	0.5953	0.9147
creatinine	rs61882193	Sinnott-Armstrong et al. (2021)	G	1 x 10-10	0.0206 unit decrease	[0.014-0.027]	LINC02747, MYEOV	G	-0.0143	0.1342	0.9154
creatinine	rs55873331	Sinnott-Armstrong et al. (2021)	T	3 x 10-13	0.029 unit decrease	[0.021-0.037]	BSN	T	-0.0172	0.1646	0.9170
creatinine	rs17060430	Sinnott-Armstrong et al. (2021)	A	4 x 10-13	0.052 unit increase	[0.038-0.066]	MED23	A	0.0272	0.2652	0.9185
creatinine	rs3777808	Rhee et al. (2013)	NR	5 x 10-7	0.5263731 unit decrease	[0.32-0.73]	EYA4	A	0.0291	0.2892	0.9201
creatinine	rs78343805	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0382 unit decrease	[0.026-0.051]	UNQ6494	T	0.0284	0.2836	0.9203
creatinine	rs3118089	Sinnott-Armstrong et al. (2021)	T	8 x 10-11	0.0395 unit increase	[0.028-0.051]	DLEU1	T	0.0260	0.2629	0.9214
creatinine	rs35304341	Sinnott-Armstrong et al. (2021)	A	7 x 10-17	0.035 unit decrease	[0.027-0.043]	KIF21B	A	0.0157	0.1674	0.9253
creatinine	rs17643040	Sinnott-Armstrong et al. (2021)	C	6 x 10-10	0.0208 unit decrease	[0.014-0.027]	EYA4, TARID	C	-0.0130	0.1471	0.9299
creatinine	rs13156373	Sinnott-Armstrong et al. (2021)	C	4 x 10-9	0.0284 unit increase	[0.019-0.038]	ARL¬†15.00	C	0.0167	0.1934	0.9312
creatinine	rs1326122	Sinnott-Armstrong et al. (2021)	A	4 x 10-18	0.073 unit increase	[0.057-0.089]	DLEU1	A	0.0280	0.3303	0.9325

creatinine	rs2511162	Kanai et al. (2018)	NR	2 x 10-8	0.02077 unit decrease	[0.014-0.028]	GAB2	G	-0.0125	0.1486	0.9330
creatinine	rs79168752	Sinnott-Armstrong et al. (2021)	T	4 x 10-10	0.0244 unit increase	[0.017-0.032]	E2F3	T	-0.0133	0.1591	0.9334
creatinine	rs2237886	Sinnott-Armstrong et al. (2021)	T	4 x 10-11	0.0259 unit decrease	[0.018-0.034]	KCNQ1	T	0.0122	0.1467	0.9340
creatinine	rs11657044	Pattaro et al. (2016)	T	8 x 10-22	0.0115 unit decrease	[0.0091-0.0139]	BCAS3	T	0.0106	0.1305	0.9353
creatinine	rs151246	Kanai et al. (2018)	NR	9 x 10-8	0.02169 unit decrease	[0.014-0.03]	AQP4-AS1	T	-0.0095	0.1195	0.9369
creatinine	rs12724682	Sinnott-Armstrong et al. (2021)	C	7 x 10-46	0.0511 unit increase	[0.044-0.058]	PPM1J	C	0.0111	0.1549	0.9427
creatinine	rs62204326	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0227 unit decrease	[0.015-0.03]	TAF4, LSM14B	T	-0.0111	0.1552	0.9433
creatinine	rs4751107	Sinnott-Armstrong et al. (2021)	T	5 x 10-10	0.0166 unit decrease	[0.011-0.022]	MGMT	T	0.0080	0.1117	0.9433
creatinine	rs4987719	Sinnott-Armstrong et al. (2021)	T	1 x 10-9	0.0407 unit increase	[0.028-0.054]	BCL2	T	-0.0193	0.2797	0.9451
creatinine	rs12358805	Sinnott-Armstrong et al. (2021)	C	1 x 10-11	0.0166 unit decrease	[0.012-0.021]	MYPN	T	-0.0068	0.1050	0.9488
creatinine	rs79782229	Sinnott-Armstrong et al. (2021)	G	1 x 10-17	0.0379 unit increase	[0.029-0.047]	'-	G	0.0112	0.1746	0.9489
creatinine	rs76026733	Sinnott-Armstrong et al. (2021)	C	5 x 10-24	0.0541 unit decrease	[0.044-0.065]	ARL¬†15.00	C	-0.0153	0.2410	0.9494
creatinine	rs1132179	Sinnott-Armstrong et al. (2021)	G	5 x 10-26	0.0542 unit increase	[0.044-0.064]	TBX2-AS1	G	0.0144	0.2277	0.9496
creatinine	rs12460876	Pattaro et al. (2016)	T	2 x 10-13	0.0066 unit decrease	[0.0048-0.0084]	SLC7A9	C	0.0066	0.1048	0.9500
creatinine	rs12460876	Köttgen et al. (2010)	C	3 x 10-15	0.01 unit increase	[0.006-0.01]	SLC7A9	C	0.0066	0.1048	0.9500
creatinine	rs12460876	Pattaro et al. (2016)	T	3 x 10-12	0.0065 unit decrease	[0.0047-0.0083]	SLC7A9	C	0.0066	0.1048	0.9500
creatinine	rs11115002	Sinnott-Armstrong et al. (2021)	T	2 x 10-9	0.0167 unit increase	[0.011-0.022]	PPFIA2	T	-0.0068	0.1144	0.9527
creatinine	rs9529913	Gorski et al. (2017)	T	3 x 10-11	0.0066 unit decrease	[0.0048-0.0084]	DACH1	C	-0.0061	0.1044	0.9536
creatinine	rs662138	Sinnott-Armstrong et al. (2021)	G	5 x 10-24	0.031 unit decrease	[0.025-0.037]	SLC22A1	G	0.0074	0.1340	0.9560
creatinine	rs7971845	Kanai et al. (2018)	NR	3 x 10-9	0.02743 unit decrease	[0.018-0.036]	'-	G	-0.0062	0.1202	0.9591

creatinine	rs6465825	Köttgen et al. (2010)	C	2 x 10-9	0.01 unit decrease	[0.006-0.01]	RSBN1L, TMEM60	C	0.0046	0.0968	0.9620
creatinine	rs6465825	Pattaro et al. (2016)	T	5 x 10-11	0.0061 unit increase	[0.0043-0.0079]	RSBN1L, TMEM60	C	0.0046	0.0968	0.9620
creatinine	rs1728918	Graham et al. (2019)	G	2 x 10-12	0.052956 unit increase	[0.039-0.066]	PPM1G, NRBP1	A	0.0052	0.1108	0.9629
creatinine	rs4957473	Sinnott-Armstrong et al. (2021)	G	5 x 10-24	0.0247 unit decrease	[0.02-0.029]	C9	G	-0.0044	0.1038	0.9659
creatinine	rs72724253	Sinnott-Armstrong et al. (2021)	T	7 x 10-11	0.0242 unit decrease	[0.017-0.031]	DUOX1	T	-0.0065	0.1566	0.9670
creatinine	rs11180732	Pattaro et al. (2016)	T	6 x 10-7	0.0041 unit increase	[0.0025-0.0057]	RN7SL734P	T	-0.0042	0.1015	0.9670
creatinine	rs17839577	Sinnott-Armstrong et al. (2021)	T	2 x 10-10	0.048 unit increase	[0.033-0.063]	'-	T	0.0121	0.2930	0.9671
creatinine	rs10262995	Stafford-Smith et al. (2015)	A	2 x 10-7	12.84 unit increase	[7.98-17.7]	BBS9	T	-0.0064	0.1578	0.9678
creatinine	rs4848698	Sinnott-Armstrong et al. (2021)	T	2 x 10-16	0.0262 unit increase	[0.02-0.032]	TFCP2L1	C	-0.0051	0.1329	0.9697
creatinine	rs10418932	Sinnott-Armstrong et al. (2021)	C	3 x 10-10	0.0208 unit increase	[0.014-0.027]	RNU6-945P, AKT2	C	0.0054	0.1438	0.9701
creatinine	rs111932172	Sinnott-Armstrong et al. (2021)	T	6 x 10-12	0.0394 unit decrease	[0.028-0.051]	BCAS3	T	0.0078	0.2228	0.9722
creatinine	rs793842	Sinnott-Armstrong et al. (2021)	C	5 x 10-9	0.0143 unit decrease	[0.0096-0.019]	DCDC2	T	-0.0033	0.0986	0.9732
creatinine	rs8091180	Pattaro et al. (2016)	A	1 x 10-9	0.006 unit decrease	[NR]	NFATC1	G	-0.0031	0.0963	0.9746
creatinine	rs11703324	Sinnott-Armstrong et al. (2021)	A	8 x 10-10	0.0296 unit increase	[0.02-0.039]	TNRC6B	A	-0.0058	0.1874	0.9753
creatinine	rs4715491	Kanai et al. (2018)	NR	5 x 10-13	0.03202 unit increase	[0.023-0.041]	FAM83B	G	0.0034	0.1147	0.9765
creatinine	rs711818	Sinnott-Armstrong et al. (2021)	G	1 x 10-18	0.0238 unit increase	[0.019-0.029]	HOXD10	G	-0.0032	0.1166	0.9778
creatinine	rs62027653	Sinnott-Armstrong et al. (2021)	G	2 x 10-14	0.0398 unit increase	[0.03-0.05]	TMEM266	G	0.0055	0.2024	0.9782
creatinine	rs163160	Pattaro et al. (2016)	A	2 x 10-9	0.0065 unit increase	[NR]	KCNQ1	G	-0.0034	0.1341	0.9796
creatinine	rs233438	Sinnott-Armstrong et al. (2021)	A	1 x 10-18	0.0272 unit decrease	[0.021-0.033]	KCNQ1	G	-0.0034	0.1341	0.9796
creatinine	rs116960885	Sinnott-Armstrong et al. (2021)	C	2 x 10-10	0.0803 unit increase	[0.056-0.105]	TBX4, LINC02875	C	-0.0092	0.4594	0.9840

creatinine	rs16966245	Sinnott-Armstrong et al. (2021)	C	4 x 10-24	0.0247 unit increase	[0.02-0.029]	WDR72	C	0.0021	0.1033	0.9841
creatinine	rs117392811	Sinnott-Armstrong et al. (2021)	G	2 x 10-26	0.0821 unit decrease	[0.067-0.097]	FBXO22	G	0.0055	0.3095	0.9857
creatinine	rs67551338	Gorski et al. (2017)	T	2 x 10-9	0.0124 unit decrease	[0.0085-0.0163]	TSPAN9	T	0.0031	0.1887	0.9868
creatinine	rs7802256	Sinnott-Armstrong et al. (2021)	T	1 x 10-11	0.0245 unit increase	[0.017-0.032]	RP9, NT5C3A	T	-0.0019	0.1464	0.9895
creatinine	rs10459012	Kanai et al. (2018)	NR	1 x 10-8	0.02215 unit increase	[0.015-0.03]	OR4A12P, OR4A11P	A	0.0016	0.1491	0.9917
creatinine	rs35985639	Kanai et al. (2018)	NR	1 x 10-8	0.02412 unit decrease	[0.016-0.032]	TFEB	A	-0.0005	0.1461	0.9971
creatinine	rs72830456	Sinnott-Armstrong et al. (2021)	A	3 x 10-9	0.0284 unit increase	[0.019-0.038]	MXI1	A	-0.0006	0.1966	0.9974
creatinine	rs11557154	Sinnott-Armstrong et al. (2021)	T	1 x 10-10	0.023 unit decrease	[0.016-0.03]	DCAF12	T	-0.0003	0.1394	0.9984

Supplementary Table S8. Studies included for metabolite GWAS replication.

Reference	Metabolites
Chambers et al. (2010)	Creatinine
Demirkan et al. (2015)	3-hydroxybutyrate
Gorski et al. (2017)	Creatinine
Graham et al. (2019)	Creatinine
Hishida et al. (2018)	Creatinine
Kanai et al. (2018)	Creatinine
Köttgen et al. (2010)	Creatinine
Nagy et al. (2017)	Creatinine
Pattaro et al. (2016)	Creatinine
Rhee et al. (2013)	Creatinine
Richardson et al. (2022)	3-hydroxybutyrate, acetoacetate
Sinnott-Armstrong et al. (2021)	Creatinine
Smith et al. (2022)	3-hydroxybutyrate, acetoacetate
Stafford-Smith et al. (2015)	Creatinine
Van Driest et al. (2015)	Creatinine
Williams et al. (2016)	Creatinine
Yasukochi et al. (2018)	Creatinine

Supplementary Table S9. Metabolite and clinical variable logistic regression (for 28- and 90-day mortality, Dialysis, RRT post and RRT prior randomisation) and linear regression (for APACHE II) results with no covariates.

Metabolite	Outcome	Effect	SE	Stat	*p*-value
3-hydroxybutyrate	28-day mortality	0.0022	0.0048	0.4570	0.6477
3-hydroxybutyrate	90-day mortality	0.0006	0.0047	0.1263	0.8995
3-hydroxybutyrate	Dialysis	-0.0106	0.0265	-0.4000	0.6891
3-hydroxybutyrate	RRT post	0.0027	0.0047	0.5685	0.5697
3-hydroxybutyrate	RRT prior	0.0048	0.0063	0.7675	0.4428
3-hydroxybutyrate	APACHE II	-0.0062	0.0159	-0.3880	0.6985
Acetate	28-day mortality	0.1939	0.1315	1.4744	0.1404
Acetate	90-day mortality	0.2191	0.1378	1.5899	0.1119
Acetate	Dialysis	0.0143	0.4315	0.0332	0.9735
Acetate	RRT post	0.3893	0.1562	2.4923	0.0127
Acetate	RRT prior	0.5464	0.1787	3.0583	0.0022
Acetate	APACHE II	0.7928	0.4186	1.8942	0.0596
Acetoacetate	28-day mortality	0.0082	0.0130	0.6328	0.5269
Acetoacetate	90-day mortality	0.0092	0.0129	0.7143	0.4750
Acetoacetate	Dialysis	0.0058	0.0379	0.1541	0.8776
Acetoacetate	RRT post	0.0032	0.0131	0.2416	0.8091
Acetoacetate	RRT prior	0.0054	0.0190	0.2832	0.7770
Acetoacetate	APACHE II	-0.0218	0.0436	-0.4994	0.6180
Acetone	28-day mortality	-0.0041	0.0077	-0.5300	0.5961
Acetone	90-day mortality	-0.0029	0.0069	-0.4183	0.6758
Acetone	Dialysis	-0.0300	0.0600	-0.5010	0.6164
Acetone	RRT post	-0.0055	0.0080	-0.6881	0.4914
Acetone	RRT prior	-0.0046	0.0139	-0.3296	0.7417
Acetone	APACHE II	0.0049	0.0224	0.2173	0.8281
Alanine	28-day mortality	0.0283	0.0148	1.9156	0.0554
Alanine	90-day mortality	0.0206	0.0145	1.4221	0.1550
Alanine	Dialysis	0.0005	0.0529	0.0102	0.9919
Alanine	RRT post	0.0415	0.0155	2.6805	0.0074
Alanine	RRT prior	0.0656	0.0189	3.4764	0.0005
Alanine	APACHE II	0.0741	0.0483	1.5330	0.1267
Citrate	28-day mortality	0.0554	0.0359	1.5443	0.1225
Citrate	90-day mortality	0.0493	0.0361	1.3660	0.1719
Citrate	Dialysis	0.0257	0.1161	0.2216	0.8247

Citrate	RRT post	0.1654	0.0486	3.4059	0.0007
Citrate	RRT prior	0.2145	0.0544	3.9440	0.0001
Citrate	APACHE II	0.1915	0.1149	1.6672	0.0971
Creatine	28-day mortality	0.0415	0.0190	2.1813	0.0292
Creatine	90-day mortality	0.0204	0.0175	1.1665	0.2434
Creatine	Dialysis	-0.0935	0.1537	-0.6085	0.5428
Creatine	RRT post	0.0259	0.0176	1.4733	0.1407
Creatine	RRT prior	0.0503	0.0203	2.4804	0.0131
Creatine	APACHE II	0.0697	0.0579	1.2052	0.2294
Creatinine	28-day mortality	0.0323	0.0238	1.3550	0.1754
Creatinine	90-day mortality	0.0069	0.0233	0.2968	0.7666
Creatinine	Dialysis	0.1385	0.0456	3.0341	0.0024
Creatinine	RRT post	0.1183	0.0301	3.9275	0.0001
Creatinine	RRT prior	0.0815	0.0299	2.7238	0.0065
Creatinine	APACHE II	0.2235	0.0779	2.8697	0.0045
Formate	28-day mortality	0.1830	0.1829	1.0007	0.3170
Formate	90-day mortality	0.0828	0.1764	0.4696	0.6386
Formate	Dialysis	-0.3343	0.6407	-0.5218	0.6018
Formate	RRT post	0.1914	0.1829	1.0464	0.2954
Formate	RRT prior	0.7174	0.2624	2.7344	0.0062
Formate	APACHE II	0.4440	0.5959	0.7451	0.4570
Glucose	28-day mortality	0.0005	0.0005	0.9182	0.3585
Glucose	90-day mortality	0.0005	0.0005	0.9827	0.3258
Glucose	Dialysis	-0.0024	0.0036	-0.6535	0.5134
Glucose	RRT post	0.0005	0.0005	0.9211	0.3570
Glucose	RRT prior	0.0011	0.0006	1.6583	0.0973
Glucose	APACHE II	0.0015	0.0017	0.8872	0.3759
Glycerol	28-day mortality	0.0185	0.0104	1.7842	0.0744
Glycerol	90-day mortality	0.0140	0.0098	1.4269	0.1536
Glycerol	Dialysis	0.0052	0.0230	0.2268	0.8206
Glycerol	RRT post	0.0303	0.0119	2.5390	0.0111
Glycerol	RRT prior	0.0447	0.0153	2.9192	0.0035
Glycerol	APACHE II	0.0102	0.0282	0.3629	0.7171
Glycine	28-day mortality	0.0280	0.0181	1.5508	0.1210
Glycine	90-day mortality	0.0147	0.0175	0.8387	0.4017
Glycine	Dialysis	0.0269	0.0546	0.4932	0.6218
Glycine	RRT post	0.0465	0.0185	2.5114	0.0120
Glycine	RRT prior	0.0801	0.0245	3.2672	0.0011
Glycine	APACHE II	0.1013	0.0591	1.7137	0.0880
Lactate	28-day mortality	0.0023	0.0012	1.9007	0.0573
Lactate	90-day mortality	0.0013	0.0012	1.0751	0.2823
Lactate	Dialysis	-0.0030	0.0063	-0.4768	0.6335
Lactate	RRT post	0.0038	0.0013	2.9352	0.0033
Lactate	RRT prior	0.0054	0.0015	3.5209	0.0004
Lactate	APACHE II	0.0070	0.0040	1.7545	0.0807
Leucine	28-day mortality	0.0224	0.0211	1.0597	0.2893
Leucine	90-day mortality	0.0129	0.0196	0.6586	0.5101
Leucine	Dialysis	0.0034	0.0638	0.0533	0.9575
Leucine	RRT post	0.0422	0.0279	1.5114	0.1307
Leucine	RRT prior	0.0261	0.0215	1.2121	0.2255
Leucine	APACHE II	0.0336	0.0638	0.5273	0.5985
Methanol	28-day mortality	0.1182	0.0993	1.1907	0.2338
Methanol	90-day mortality	0.0275	0.0974	0.2825	0.7776
Methanol	Dialysis	0.1090	0.2899	0.3760	0.7069
Methanol	RRT post	0.1775	0.1006	1.7643	0.0777
Methanol	RRT prior	0.2909	0.1232	2.3607	0.0182
Methanol	APACHE II	0.3613	0.3298	1.0956	0.2745
Myo-inositol	28-day mortality	0.0309	0.0154	2.0084	0.0446

Myo-inositol	90-day mortality	0.0106	0.0145	0.7275	0.4669
Myo-inositol	Dialysis	0.0484	0.0264	1.8366	0.0663
Myo-inositol	RRT post	0.0618	0.0189	3.2768	0.0011
Myo-inositol	RRT prior	0.0472	0.0177	2.6653	0.0077
Myo-inositol	APACHE II	0.0688	0.0493	1.3974	0.1640
Phenylalanine	28-day mortality	0.0947	0.0554	1.7094	0.0874
Phenylalanine	90-day mortality	0.0473	0.0535	0.8827	0.3774
Phenylalanine	Dialysis	0.1381	0.1328	1.0392	0.2987
Phenylalanine	RRT post	0.2084	0.0625	3.3371	0.0008
Phenylalanine	RRT prior	0.2584	0.0739	3.4979	0.0005
Phenylalanine	APACHE II	0.3455	0.1804	1.9149	0.0568
Pyruvate	28-day mortality	0.0921	0.0345	2.6723	0.0075
Pyruvate	90-day mortality	0.0738	0.0340	2.1714	0.0299
Pyruvate	Dialysis	-0.0341	0.1386	-0.2463	0.8054
Pyruvate	RRT post	0.0944	0.0348	2.7097	0.0067
Pyruvate	RRT prior	0.1333	0.0387	3.4417	0.0006
Pyruvate	APACHE II	0.1862	0.1043	1.7851	0.0757
Tyrosine	28-day mortality	0.2013	0.0890	2.2620	0.0237
Tyrosine	90-day mortality	0.1471	0.0856	1.7188	0.0857
Tyrosine	Dialysis	0.0316	0.2868	0.1101	0.9123
Tyrosine	RRT post	0.2186	0.0900	2.4284	0.0152
Tyrosine	RRT prior	0.4206	0.1273	3.3048	0.0010
Tyrosine	APACHE II	0.3806	0.2772	1.3727	0.1712
Valine	28-day mortality	-0.0095	0.0297	-0.3205	0.7486
Valine	90-day mortality	-0.0227	0.0284	-0.7991	0.4242
Valine	Dialysis	0.0011	0.1028	0.0102	0.9918
Valine	RRT post	0.0121	0.0291	0.4146	0.6785
Valine	RRT prior	0.0856	0.0419	2.0401	0.0413
Valine	APACHE II	-0.0288	0.0941	-0.3056	0.7602

Supplementary Table S10. Metabolite and clinical variable logistic regression (for 28- and 90-day mortality, Dialysis, RRT post and RRT prior randomisation) and linear regression (for APACHE II) results with covariates (patient sex, age, APACHE II*, admission type (medical or surgical), trial site, and the use of RRT in the 24 hours prior to randomisation). *APACHE II was not included as a covariate when APACHE II was the outcome of interest

Metabolite	**Outcome**	**Effect**	**SE**	**Stat**	***p*-value**
3-hydroxybutyrate	28-day mortality	0.0010	0.0053	0.1925	0.8474
3-hydroxybutyrate	90-day mortality	-0.0009	0.0051	-0.1830	0.8548
3-hydroxybutyrate	Dialysis	-0.0214	0.0283	-0.7580	0.4484
3-hydroxybutyrate	RRT post	0.0034	0.0058	0.5929	0.5532
3-hydroxybutyrate	APACHE II	-0.0047	0.0155	-0.3054	0.7605
Acetate	28-day mortality	0.0440	0.1557	0.2828	0.7773
Acetate	90-day mortality	0.1154	0.1666	0.6929	0.4884
Acetate	Dialysis	-0.4555	0.5151	-0.8844	0.3765
Acetate	RRT post	0.2093	0.2163	0.9676	0.3332
Acetate	APACHE II	0.4455	0.4234	1.0521	0.2940
Acetoacetate	28-day mortality	0.0061	0.0141	0.4327	0.6652
Acetoacetate	90-day mortality	0.0067	0.0136	0.4962	0.6197
Acetoacetate	Dialysis	-0.0185	0.0557	-0.3319	0.7400
Acetoacetate	RRT post	0.0065	0.0153	0.4231	0.6722
Acetoacetate	APACHE II	-0.0166	0.0424	-0.3925	0.6951
Acetone	28-day mortality	-0.0079	0.0087	-0.9059	0.3650
Acetone	90-day mortality	-0.0062	0.0076	-0.8213	0.4115
Acetone	Dialysis	-0.0526	0.0624	-0.8436	0.3989
Acetone	RRT post	-0.0057	0.0093	-0.6144	0.5390
Acetone	APACHE II	0.0063	0.0215	0.2950	0.7683
Alanine	28-day mortality	0.0225	0.0171	1.3105	0.1900
Alanine	90-day mortality	0.0146	0.0168	0.8672	0.3858
Alanine	Dialysis	-0.0464	0.0550	-0.8448	0.3982
Alanine	RRT post	0.0275	0.0204	1.3473	0.1779

Alanine	APACHE II	0.0310	0.0482	0.6424	0.5213
Citrate	28-day mortality	0.0272	0.0419	0.6487	0.5166
Citrate	90-day mortality	0.0266	0.0409	0.6511	0.5150
Citrate	Dialysis	-0.2791	0.1995	-1.3991	0.1618
Citrate	RRT post	0.1023	0.0622	1.6438	0.1002
Citrate	APACHE II	0.1448	0.1215	1.1918	0.2348
Creatine	28-day mortality	0.0244	0.0202	1.2068	0.2275
Creatine	90-day mortality	0.0016	0.0191	0.0851	0.9322
Creatine	Dialysis	-0.1999	0.1761	-1.1350	0.2564
Creatine	RRT post	0.0013	0.0263	0.0503	0.9599
Creatine	APACHE II	0.0247	0.0575	0.4289	0.6684
Creatinine	28-day mortality	0.0076	0.0262	0.2901	0.7718
Creatinine	90-day mortality	-0.0233	0.0262	-0.8878	0.3747
Creatinine	Dialysis	0.1166	0.0548	2.1282	0.0333
Creatinine	RRT post	0.0920	0.0321	2.8644	0.0042
Creatinine	APACHE II	0.1579	0.0761	2.0735	0.0393
Formate	28-day mortality	0.0747	0.2064	0.3622	0.7172
Formate	90-day mortality	-0.0206	0.1983	-0.1038	0.9173
Formate	Dialysis	-0.7612	0.5608	-1.3574	0.1747
Formate	RRT post	-0.0970	0.2431	-0.3991	0.6898
Formate	APACHE II	0.0975	0.5741	0.1698	0.8653
Glucose	28-day mortality	0.0003	0.0006	0.4723	0.6367
Glucose	90-day mortality	0.0004	0.0006	0.6764	0.4988
Glucose	Dialysis	-0.0032	0.0047	-0.6777	0.4980
Glucose	RRT post	0.0002	0.0008	0.2640	0.7918
Glucose	APACHE II	0.0008	0.0017	0.5054	0.6138
Glycerol	28-day mortality	0.0136	0.0118	1.1462	0.2517
Glycerol	90-day mortality	0.0085	0.0112	0.7588	0.4479
Glycerol	Dialysis	-0.0218	0.0373	-0.5835	0.5595
Glycerol	RRT post	0.0215	0.0150	1.4383	0.1504
Glycerol	APACHE II	-0.0188	0.0285	-0.6592	0.5106
Glycine	28-day mortality	0.0145	0.0200	0.7262	0.4677
Glycine	90-day mortality	0.0003	0.0194	0.0136	0.9892
Glycine	Dialysis	-0.0341	0.0603	-0.5663	0.5712
Glycine	RRT post	0.0191	0.0231	0.8276	0.4079
Glycine	APACHE II	0.0533	0.0581	0.9173	0.3600
Lactate	28-day mortality	0.0015	0.0014	1.0922	0.2747
Lactate	90-day mortality	0.0003	0.0013	0.2213	0.8249
Lactate	Dialysis	-0.0089	0.0078	-1.1419	0.2535
Lactate	RRT post	0.0025	0.0017	1.5304	0.1259
Lactate	APACHE II	0.0039	0.0040	0.9758	0.3303
Leucine	28-day mortality	0.0179	0.0206	0.8692	0.3847
Leucine	90-day mortality	0.0085	0.0198	0.4323	0.6655
Leucine	Dialysis	-0.0586	0.0997	-0.5885	0.5562
Leucine	RRT post	0.0280	0.0244	1.1479	0.2510
Leucine	APACHE II	0.0317	0.0607	0.5223	0.6020
Methanol	28-day mortality	0.0865	0.1087	0.7956	0.4262
Methanol	90-day mortality	-0.0166	0.1070	-0.1547	0.8771
Methanol	Dialysis	0.0380	0.3836	0.0990	0.9211
Methanol	RRT post	0.0643	0.1271	0.5057	0.6130
Methanol	APACHE II	0.2290	0.3205	0.7145	0.4757
Myo-inositol	28-day mortality	0.0240	0.0174	1.3749	0.1692
Myo-inositol	90-day mortality	-0.0013	0.0163	-0.0812	0.9353
Myo-inositol	Dialysis	0.0199	0.0320	0.6223	0.5337
Myo-inositol	RRT post	0.0541	0.0203	2.6664	0.0077
Myo-inositol	APACHE II	0.0420	0.0486	0.8643	0.3886
Phenylalanine	28-day mortality	0.0521	0.0627	0.8318	0.4055
Phenylalanine	90-day mortality	-0.0020	0.0605	-0.0338	0.9731

Phenylalanine	Dialysis	-0.0289	0.1462	-0.1979	0.8431
Phenylalanine	RRT post	0.1393	0.0781	1.7848	0.0743
Phenylalanine	APACHE II	0.1872	0.1791	1.0454	0.2970
Pyruvate	28-day mortality	0.0856	0.0407	2.1017	0.0356
Pyruvate	90-day mortality	0.0657	0.0400	1.6430	0.1004
Pyruvate	Dialysis	-0.2463	0.2665	-0.9243	0.3553
Pyruvate	RRT post	0.0489	0.0422	1.1573	0.2472
Pyruvate	APACHE II	0.1143	0.1038	1.1007	0.2723
Tyrosine	28-day mortality	0.1627	0.1027	1.5844	0.1131
Tyrosine	90-day mortality	0.1058	0.0992	1.0663	0.2863
Tyrosine	Dialysis	-0.2680	0.3024	-0.8864	0.3754
Tyrosine	RRT post	0.1398	0.1169	1.1955	0.2319
Tyrosine	APACHE II	0.0992	0.2762	0.3590	0.7199
Valine	28-day mortality	-0.0223	0.0321	-0.6945	0.4873
Valine	90-day mortality	-0.0347	0.0307	-1.1303	0.2583
Valine	Dialysis	-0.0628	0.0958	-0.6556	0.5121
Valine	RRT post	-0.0076	0.0379	-0.1992	0.8421
Valine	APACHE II	-0.0902	0.0897	-1.0061	0.3155

Supplementary Table S11. Results of statistical power (α=0.05) calculations for metabolite genetic variants to detect an association with a continuous outcome (e.g. APACHE II). Sample size used for statistical power calculations was matched to ADRENAL-GEPS analysis (N=493).

Metabolite	MAF	VAR(SNP)	$\beta_{SNP-metab}$	$\beta_{metab-outcome}$	Total QTL variance	Power
3-hydroxybutyrate	0.48	0.4992	0.6	0.1	0.0018	0.1561
3-hydroxybutyrate	0.48	0.4992	0.6	0.2	0.0072	0.4706
3-hydroxybutyrate	0.48	0.4992	0.6	0.3	0.0162	0.8093
3-hydroxybutyrate	0.48	0.4992	0.6	0.4	0.0288	0.9666
3-hydroxybutyrate	0.48	0.4992	0.6	0.5	0.0449	0.9974
3-hydroxybutyrate	0.48	0.4992	0.6	0.6	0.0647	0.9999
3-hydroxybutyrate	0.48	0.4992	0.6	0.7	0.0881	1
3-hydroxybutyrate	0.48	0.4992	0.6	0.8	0.1150	1
3-hydroxybutyrate	0.48	0.4992	0.6	0.9	0.1456	1
3-hydroxybutyrate	0.48	0.4992	0.6	1	0.1797	1
acetoacetate	0.97	0.0582	1.72	0.1	0.0017	0.1516
acetoacetate	0.97	0.0582	1.72	0.2	0.0069	0.4546
acetoacetate	0.97	0.0582	1.72	0.3	0.0155	0.7924
acetoacetate	0.97	0.0582	1.72	0.4	0.0275	0.96
acetoacetate	0.97	0.0582	1.72	0.5	0.0430	0.9965
acetoacetate	0.97	0.0582	1.72	0.6	0.0620	0.9999
acetoacetate	0.97	0.0582	1.72	0.7	0.0844	1
acetoacetate	0.97	0.0582	1.72	0.8	0.1102	1
acetoacetate	0.97	0.0582	1.72	0.9	0.1395	1
acetoacetate	0.97	0.0582	1.72	1	0.1722	1
creatinine	0.49	0.4998	0.54	0.1	0.0015	0.1356
creatinine	0.49	0.4998	0.54	0.2	0.0058	0.3967
creatinine	0.49	0.4998	0.54	0.3	0.0131	0.7229
creatinine	0.49	0.4998	0.54	0.4	0.0233	0.9266

creatinine	0.49	0.4998	0.54	0.5	0.0364	0.9898
creatinine	0.49	0.4998	0.54	0.6	0.0525	0.9993
creatinine	0.49	0.4998	0.54	0.7	0.0714	1
creatinine	0.49	0.4998	0.54	0.8	0.0933	1
creatinine	0.49	0.4998	0.54	0.9	0.1181	1
creatinine	0.49	0.4998	0.54	1	0.1457	1

Supplementary Table S12. Results of statistical power (α=0.05) calculations for metabolite genetic variants to detect an association with a binary outcome (e.g. susceptibility to sepsis). Sample sizes used for statistical power calculations were matched to ADRENAL-GEPS and QIMR controls analysis (N_{cases}=493, $N_{controls}$=2442).

Metabolite	MAF	VAR(SNP)	$\beta_{SNP-metab}$	$\beta_{metab-outcome}$	Logistic $\beta_{metab-outcome}$	Total QTL variance	Power
3-hydroxybutyrate	0.48	0.4992	0.6	0.01	0.0246	1.80E-05	0.061
3-hydroxybutyrate	0.48	0.4992	0.6	0.05	0.1326	0.0004	0.216
3-hydroxybutyrate	0.48	0.4992	0.6	0.1	0.2612	0.0018	0.568
3-hydroxybutyrate	0.48	0.4992	0.6	0.2	0.5143	0.0072	0.99
3-hydroxybutyrate	0.48	0.4992	0.6	0.3	0.7675	0.0162	**1**
3-hydroxybutyrate	0.48	0.4992	0.6	0.4	1.0346	0.0288	**1**
3-hydroxybutyrate	0.48	0.4992	0.6	0.5	1.3217	0.0449	1
3-hydroxybutyrate	0.48	0.4992	0.6	0.6	1.6703	0.0647	1
3-hydroxybutyrate	0.48	0.4992	0.6	0.7	2.1063	0.0881	1
3-hydroxybutyrate	0.48	0.4992	0.6	0.8	2.7655	0.1150	1
acetoacetate	0.97	0.0582	1.72	0.01	0.0275	1.72E-05	0.069
acetoacetate	0.97	0.0582	1.72	0.05	0.1300	0.0004	0.245
acetoacetate	0.97	0.0582	1.72	0.1	0.2619	0.0017	0.693
acetoacetate	0.97	0.0582	1.72	0.2	0.5250	0.0069	1
acetoacetate	0.97	0.0582	1.72	0.3	0.7927	0.0155	1
acetoacetate	0.97	0.0582	1.72	0.4	1.0783	0.0275	1
acetoacetate	0.97	0.0582	1.72	0.5	1.3954	0.0430	1
acetoacetate	0.97	0.0582	1.72	0.6	1.7660	0.0620	1
acetoacetate	0.97	0.0582	1.72	0.7	2.2479	0.0844	1
acetoacetate	0.97	0.0582	1.72	0.8	2.9628	0.1102	1
creatinine	0.49	0.4998	0.54	0.01	0.0275	1.46E-05	0.052
creatinine	0.49	0.4998	0.54	0.05	0.1294	0.0004	0.177
creatinine	0.49	0.4998	0.54	0.1	0.2613	0.0015	0.529
creatinine	0.49	0.4998	0.54	0.2	0.5172	0.0058	0.972
creatinine	0.49	0.4998	0.54	0.3	0.7780	0.0131	1
creatinine	0.49	0.4998	0.54	0.4	1.0450	0.0233	1
creatinine	0.49	0.4998	0.54	0.5	1.3407	0.0364	1
creatinine	0.49	0.4998	0.54	0.6	1.6865	0.0525	1
creatinine	0.49	0.4998	0.54	0.7	2.1285	0.0714	1
creatinine	0.49	0.4998	0.54	0.8	2.8027	0.0933	1

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