



**Figure S1.** The relative abundance distributions of 21 selected bacterial species between Whites and African American subpopulations.

**Table S1.** Correspondence of ABO haplotype determined by single nucleotide polymorphisms (SNPs).

SNP RS ID	TAG ABO HAPLOTYPES
RS8176719-C INSERTION	O1
RS41302905-T	O2
RS1053878-A	A2
RS8176743-T	B
RS579459-C	A1
RS2519093-T	A1

**Table S2.** HD4 chromatographic method summary.

<b>NEG</b>				
Time (min)	Flow (mL/min)	%A	%B	A=6.5mM Ammonium Bicarbonate Aqueous pH ~8
Initial	0.35	99.5	0.5	B= 6.5mM Ammonium Bicarbonate in 95%Methanol 5% Water
4	0.35	30	70	
4.5	0.35	1	99	Injection solvent=6.5mM Ammonium Bicarbonate in water
5.5	0.35	1	99	
5.7	0.35	99.5	0.5	
6.8	0.35	99.5	0.5	
<b>POSear</b>				
Time (min)	Flow (mL/min)	%A	%B	A=Water 0.1%Formic acid 0.05% Perflouropentanoic acid (PFPA)
Initial	0.35	95	5	B=Methanol 0.1%FA 0.05% Perflouropentanoic acid (PFPA)
3.35	0.35	20	80	
3.36	0.35	95	5	Injection Solvent= Water 0.1%Formic acid 0.05% Perflouropentanoic acid (PFPA)
3.4	0.35	95	5	
<b>POSLate</b>				
Time (min)	Flow (mL/min)	%A	%B	A=Water 0.1%Formic acid 0.05% Perflouropentanoic acid (PFPA)
Initial	0.6	60	40	B= 50%Acetonitrile 50% Methanol 0.1%Formic acid 0.05% Perflouropentanoic acid (PFPA)
1	0.6	0.5	99.5	
3.4	0.6	0.5	99.5	Injection Sovent = 90%Isopropanol 10% water with 0.1%Formic acid 0.05% Perflouropentanoic acid (PFPA)
3.41	0.6	60	40	
<b>Pol</b>				
Time (min)	Flow (mL/min)	%A	%B	A=10mM Ammonium Formate in 15%water 5%Methanol 80%Acetonitrile ph ~10.16
Initial	0.5	95	5	B=10mM Ammonium Formate in 50%water 50%Acetonitrile ph ~10.6
3.5	0.5	50	50	
5.5	0.5	5	95	Injection solvent= 10mM Ammonium Formate in 15%water 5%Methanol 80%Acetonitrile ph ~10.16
6.5	0.5	5	95	
6.7	0.5	95	5	

Table S3. HD4 Standards.

	Instrument Standards	Performance	Process Standards	Assessment
<b>POSear (Method 1)</b>	d7-Glucose		Flourophenyglycine	
	d5-Glutamine		Chlorophenylalanine	
	d2-Threonine			
	d5-Hippuric Acid			
	d3-Methionine			
	d3-Leucine			
	Bromophenylalanine			
<b>POSLate (Method 2)</b>	Bromophenylalanine		d6-Cholesterol	
	d5-Androstene		Chlorophenylalanine	
	d9-Progesterone			
	d4-Dioctylphthalte			
<b>Neg (Method 3)</b>	d7-Glucose		Tridecanoic Acid	
	d3-Methionine		Chlorophenylalanine	
	d3-Leucine			
	d8-Phenylalanine			
	d5-Tryptophan			
	Bromophenylalanine			
	d15-Octanoic Acid			
	d19-Decanoic Acid			
	d27-Tetradenanoic Acid			
	d35-Octadecanoic Acid			
	d2-Eicosanoic Acid			
<b>Pol (Method 4)</b>	d35-Octadecanoic Acid		Chlorophenylalanine	
	d5-Indole Acetate		Flourophenyglycine	
	Bromophenylalanine		d8-Valine	
	d5-Tryptophan			
	d4-Tyrosine			
	d3-Serine			
	d3-Aspartic Acid			
	d7-Ornithine			
	d4-Lysine			

**Table S4.** Mass accuracy summary.

Name	Average error (ppm)
Isoleucine	0.96
Leucine	0.79
Valine	0.26
Lactate	6.21
Glucose	0.69
1,5-AG	0.35
2-Hydroxybutyrate/iso	2.32
N-lactoyl Phenylalanine	0.41
N-lactoyl Tyrosine	0.70
N-lactoyl Valine	0.53
N-lactoyl Leucine	0.86
N-lactoyl Isoleucine	0.63
Metabolonic Lactone Sulfate	0.37

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