

## Supplemental Table1

### Standards and internal standards

	No	Name	Vendor	Product No.
Standards	1	3-Hydroxypropionic acid	Tokyo Chemical Industry (Tokyo, Japan)	H0297
	2	Methylmalonic acid	Sigma-Aldrich (St. Louis, MO, USA)	M54058
	3	N-Isovalerylglycine	Sigma-Aldrich (St. Louis, MO, USA)	43424
	4	$\beta$ -Hydroxyisovaleric acid	Tokyo Chemical Industry (Tokyo, Japan)	H0701
	5	3-Methylcrotonylglycine	Santa Cruz Biotechnology (Dallas, TX, USA)	sc-209651
	6	3-Hydroxy-3-methylglutaric acid	Tokyo Chemical Industry (Tokyo, Japan)	H0436
	7	3-Hydroxy-2-methylbutanoic acid	Toronto Research Chemicals (Toronto, Canada)	H946485
	8	Glutaric acid	Tokyo Chemical Industry (Tokyo, Japan)	G0069
	9	3-Methylglutaconic acid	Sigma-Aldrich (St. Louis, MO, USA)	6689
	10	3-Methylglutaric acid	Tokyo Chemical Industry (Tokyo, Japan)	M0330
	11	3-Hydroxyglutaric acid	Sigma-Aldrich (St. Louis, MO, USA)	4725
	12	2-Hydroxyglutaric acid	Sigma-Aldrich (St. Louis, MO, USA)	90790
	13	Ethylmalonic acid	Fujifilm Wako Pure Chemicals (Osaka, Japan)	320-92121
	14	Methylsuccinic acid	Tokyo Chemical Industry (Tokyo, Japan)	M0430
	15	Adipic acid	Tokyo Chemical Industry (Tokyo, Japan)	A0161
	16	N-Hexanoylglycine	Sigma-Aldrich (St. Louis, MO, USA)	93544
	17	Suberic acid	Santa Cruz Biotechnology (Dallas, TX, USA)	sc-208404
	18	Sebacic acid	Fujifilm Wako Pure Chemicals (Osaka, Japan)	196-00272
	19	N-Suberoylglycine	Sigma-Aldrich (St. Louis, MO, USA)	52888
Internal Standards	1	<sup>13</sup> C <sub>3</sub> -3-Hydroxypropionic acid	ALSACHIM (Illkirch, France)	C8223
	2	<sup>13</sup> C <sub>4</sub> -Methylmalonic acid	ALSACHIM (Illkirch, France)	C8325
	3	2-Ethylbutyric acid	Sigma-Aldrich (St. Louis, MO, USA)	109959