

Supplementary Table S1: Source information, and general genome features of *Kluyveromyces marxianus* strains

<i>WGS</i>	Strains	BioSample	No of contigs	Contig N50(Mb)	Contig L50	Isolation source	Region	GC Content (%)	Submitter	Year	Sequencing platform
BBIL00000000	DMB1	SAMD00017758	36	1.4	4	Sugarcane	Japan	40.09	National Institute of Advanced Industrial Science and Technology	2014	PacBio RS II
LDJA00000000	IIPE453	SAMN01103505	707	0.0353	93	Sugar mill waste	India	40.17	CSIR-Indian Institute of Petroleum	2012	Illumina NextSeq
LDJA00000000	UFS-Y2791	SAMN04590183	1088	0.0213	159	Agave plant	South Africa	40.04	University of the Free State	2007	Illumina HiSeq
CP015054	FIM1	SAMN04601176	8	1.4	4	Yogurt	China	40.16	Fudan university	2016	Illumina Hiseq 2000
CP023456	NRRL Y-6860	SAMN06013971	9	1.4	4	Banana alcoholic beverage	Ecuador	40.20	J. Craig Venter Institute	1971	PacBio
CP015054	LHW-O	SAMN06765481	480	0.0401	88	Onion	South Korea	40.15	World Institute of Kimchi	2016	Illumina MiSeq
CP015054	L03	SAMN12504567	262	0.0694	52	Dairy	Ireland	40.13	Wolfe Lab, Conway Institute, University College Dublin	2019	Illumina HiSeq
CP015054	Olga-2	SAMN08581128	1154	0.0182	74	Kefir	Germany	40.19	SysMilk	2016	Illumina HiSeq
PUHV00000000	Olga-1	SAMN08581126	973	0.0201	147	kefir	Germany	40.13	Chalmers University of Technology	2016	Illumina HiSeq
JAKGCN000000000	KM3	SAMN24619240	20	1.0	4	Tibetan kefir	China	40.21	Technology Center of Bright Dairy & Food Co., Ltd, China	2012	Illumina HiSeq; PacBio

AP014599	NBRC1777	SAMD00017339	8	1.4	4	-	Japan	40.12	Organization of Advanced Science and Technology, Kobe University	2014	PacBio RS II; Ion Torrent
CP067318	CBS6556	SAMN17225432	8	1.4	4	Fermented maize dough	Mexico	40.21	Delft University of Technology	1971	Oxford Nanopore MinION
JAIRBU000000000	SLP1	SAMN18296546	38	0.3689	9	fermentation tanks	Mexico	39.5	Centro de Investigacion y Asistencia en Tecnologia y Diseno del Estado de Jalisco AC	2009/2010	PacBio RSII
AKFM000000000	KCTC1755	SAMN02981417	111	1.2	4	Pozol	Mexico	40.14	Korea Research Institute of Bioscience and Biotechnology	2014	Illumina GAIIx
AP012213	DMKU3-1042_GCF	SAMD00067077	8	1.4	4	Budding yeast	Japan	40.12	Yamaguchi University	2014	Sanger ABI3730

Supplementary Table S2. Amino acids and their putative functions detected in the *K. marxianus* DMKU3-1042 isolates.

Amino acids	Putative functions
Lysine, threonine, methionine and cysteine	homoserine kinase homoserine dehydrogenase aspartokinase Aspartate-semialdehyde dehydrogenase threonine synthase S-methyl-5-thioribose-1-phosphate isomerase homocysteine S-methyltransferase 2,3-diketo-5-methylthiopentyl-1-phosphate enolase-phosphatase Methylthioribulose-1-phosphate dehydratase 5'-methylthioadenosine phosphorylase 1,2-dihydroxy-3-keto-5-methylthiopentene dioxygenase
Histidine metabolism	Imidazoleglycerol-phosphate dehydratase Histidinol-phosphate aminotransferase Imidazole glycerol phosphate synthase Adenylosuccinate synthetase Phosphoribosylformimino-5-aminoimidazole carboxamide ribotide isomerase
Aromatic amino acids and derivatives	Prephenate dehydratase Chorismate mutase III Prephenate and/or arogenate dehydrogenase Phosphoribosylanthranilate isomerase

	<p>Tryptophan synthase beta chain</p> <p>Anthranilate synthase</p>
Proline and 4-hydroxyproline	<p>Gamma-glutamyl phosphate reductase</p> <p>Glutamate-5-kinase</p> <p>pyrroline-5-carboxylate reductase</p> <p>NADP-specific glutamate dehydrogenase</p> <p>delta-1-pyrroline-5-carboxylate dehydrogenase</p> <p>Argininosuccinate synthase</p> <p>argininosuccinate lyase</p> <p>ornithine aminotransferase</p> <p>N-acetylornithine aminotransferase</p> <p>Arginase</p>
Alanine, serine and glycine	<p>phosphoserine aminotransferase</p> <p>aminomethyltransferase</p> <p>glycine dehydrogenase</p> <p>glycine cleavage system H protein</p>
Glutamine, glutamate, aspartate, asparagine, ammonia	<p>Aspartokinase</p> <p>homoserine dehydrogenase</p> <p>Glutamine synthetase type II</p> <p>NAD-specific glutamate dehydrogenase</p> <p>NADP-specific glutamate dehydrogenase</p> <p>Aspartate-semialdehyde dehydrogenase</p>
Arginine; urea cycle, creatine and polyamines	<p>N-acetylglutamate kinase</p> <p>argininosuccinate lyase</p> <p>ornithine carbamoyltransferase</p> <p>Glutamate N- acetyltransferase</p> <p>Spermidine synthase</p> <p>Arginase</p> <p>Argininosuccinate synthase</p>

