

S1 Table. *Komagataella phaffii* strains used in this study.

Strain	Description	Source
CBS7435 (NRRL Y-11430; CECT 11047)	Genome reference strain developed by Phillips Petroleum. Progenitor of strains GS115 and X-33. Inferred by Braun-Galleani et al. (2019) and Brady et al. (2020) to be derived from NRRL Y-7556 (CBS 2612), which is the type strain of <i>K. phaffii</i> and is a natural isolate from black oak (<i>Quercus kelloggii</i>), California, USA. Wild type.	Spanish Type Culture Collection (CECT)
Pp2 (NRRL Y-17741)	Natural isolate from Emory oak (<i>Quercus emoryi</i>), Arizona, USA. Wild type.	NRRL collection (USDA ARS)
Pp4 (NRRL YB-378)	Natural isolate from elm tree (<i>Ulmus americana</i>), USA. Wild type.	NRRL collection (USDA ARS)
CBS_PGAP	CBS7435 transformant harboring an integrated empty pGAP α vector (control strain)	This study
CBS_BGL9	CBS7435 transformant harboring BGL expression cassette	This study
Pp2_BGL5	Pp2 transformant harboring BGL expression cassette	This study
Pp4_BGL3	Pp4 transformant harboring BGL expression cassette	This study
CBS_BGL9/Pp2_BGL5	Hybrid diploid isolated from CBS_BGL9 x Pp2_BGL5 cross	This study
CBS_BGL9/Pp4_BGL3	Hybrid diploid isolated from CBS_BGL9 x Pp4_BGL3 cross	This study
CBS_BGL9_HOC1FL	CBS_BGL9 strain with corrected, full-length <i>HOC1</i> allele	This study
Pp2_BGL5_HOC1DS	Pp2_BGL5 strain with disrupted <i>HOC1</i> allele (6xSTOP tag)	This study
Pp4_BGL3_HOC1DS	Pp4_BGL3 strain with disrupted <i>HOC1</i> allele (6xSTOP tag)	This study
CBS_BGL9/Pp2_BGL5_HOC1DS	CBS_BGL9/Pp2_BGL5 diploid with the truncated (frameshifted) <i>HOC1</i> allele of CBS_BGL9 and disrupted <i>HOC1</i> allele of Pp2_BGL5	This study
CBS_BGL9/Pp4_BGL3_HOC1DS	CBS_BGL9/Pp4_BGL3 diploid with the truncated (frameshifted) <i>HOC1</i> allele of CBS_BGL9 and disrupted <i>HOC1</i> allele of Pp4_BGL3	This study
CBS_BGL9_ira1/Pp2_BGL5_IRA1	Hemizygote derivative of CBS_BGL9/Pp2_BGL5 harboring a disrupted <i>IRA1</i> allele of CBS_BGL9	This study
CBS_BGL9_IRA1/Pp2_BGL5_ira1	Hemizygote derivative of CBS_BGL9/Pp2_BGL5 harboring a disrupted <i>IRA1</i> allele of Pp2_BGL5	This study
CBS_BGL9_IRA1 ^{N200D}	CBS_BGL9 strain harboring an <i>IRA1</i> N200D (c.598A>G) allele	This study
CBS_BGL9_IRA1 ^{V393L}	CBS_BGL9 strain harboring an <i>IRA1</i> V393L (c.1177G>T) allele	This study
CBS_BGL9_IRA1 ^{D399N}	CBS_BGL9 strain harboring an <i>IRA1</i> D399N (c.1195G>A) allele	This study
CBS_BGL9_IRA1 ^{G1466D}	CBS_BGL9 strain harboring an <i>IRA1</i> G1466D (c.4397G>A) allele	This study
CBS_BGL9_IRA1 ^{K404fs}	CBS_BGL9 strain harboring a frameshifted allele of <i>IRA1</i> at amino acid position 404	This study
IT1005	Strain expressing codon-optimized <i>Aspergillus niger</i> β -galactosidase from UPP constitutive promoter. BG08 genetic background (derivative of NRRL Y-11430).	Ilya Tolstorukov
IT1018	Strain expressing codon-optimized <i>Aspergillus niger</i> α -galactosidase from UPP constitutive promoter. NRRL Y-11430 genetic background.	Ilya Tolstorukov

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