

**Supplementary Table S1:** Commercial cultures used to inoculate non-spontaneous mixed-fermentation beers and matches found in the next-generation sequencing data.

Sample	Commercial culture inoculated*	Identification match
#2	New World Saison Blend Escarpment Labs ( <i>Saccharomyces</i> spp. + <i>Brettanomyces</i> spp.) Brett M Escarpment Labs ( <i>Brettanomyces bruxellensis</i> )	<i>Saccharomyces cerevisiae</i> was identified in 61.4% of ASVs from fungi <i>Brettanomyces bruxellensis</i> was identified in 30.3% of ASVs from fungi
#11	Sour Solera Bootleg ( <i>Saccharomyces</i> spp. + <i>Brettanomyces</i> spp. + <i>Lactobacillus</i> spp. + <i>Pediococcus</i> spp. + other wild microorganisms) Mélange Yeast Bay ( <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i> + <i>Saccharomyces fermentati</i> + <i>Brettanomyces</i> spp. + <i>Lactobacillus brevis</i> + <i>Lactobacillus delbrueckii</i> + <i>Pediococcus damnosus</i> ) Bugcounty East Coast Yeast ( <i>Saccharomyces</i> spp. + <i>Brettanomyces lambicus</i> + <i>Brettanomyces anomalus</i> + <i>Brettanomyces claussenii</i> + <i>Brettanomyces custersianus</i> + <i>Brettanomyces naardenensis</i> + <i>Lactobacillus</i> spp. + <i>Pediococcus</i> spp.)	<i>Saccharomyces cerevisiae</i> was identified in 77.9% of ASVs from fungi <i>Brettanomyces bruxellensis</i> in 13.6% of ASVs from fungi <i>Brettanomyces anomalus</i> in 6.7% of ASVs from fungi <i>Brettanomyces naardenensis</i> in 0.8% of ASVs from fungi <i>Brettanomyces custersianus</i> in 0.3% of ASVs from fungi <i>Lactobacillus casei-paracasei</i> in 74.0% of ASVs from bacteria <i>Pediococcus damnosus</i> in 13.8% of ASVs from bacteria <i>Lactobacillus brevis</i> in 9.9% of ASVs from bacteria <i>Lactobacillus acetotolerans</i> in 0.5% of ASVs from bacteria <i>Lactobacillus plantarum</i> in 0.2% of ASVs from bacteria <i>Lactobacillus delbrueckii</i> in 0.06% of ASVs from bacteria
#18	Roeselare blend Wyeast ( <i>Brettanomyces</i> spp. + <i>Saccharomyces cerevisiae</i> + <i>Lactobacillus</i> spp. + <i>Pediococcus</i> spp.) French Saison Wyeast ( <i>Saccharomyces cerevisiae</i> var. <i>diastaticus</i> ) WLP650 White Labs ( <i>Brettanomyces bruxellensis</i> )	<i>Brettanomyces bruxellensis</i> was identified in 99.5% of ASVs from fungi <i>Saccharomyces cerevisiae</i> was identified in 0.09% of ASVs from fungi <i>Lactobacillus acetotolerans</i> was identified in 100% of ASVs from bacteria
#19	Belgian Saison I White Labs ( <i>Saccharomyces cerevisiae</i> )	<i>Saccharomyces cerevisiae</i> was identified in 7.3% of ASVs from fungi

\*The composition of the commercial culture was obtained from company/laboratory website.