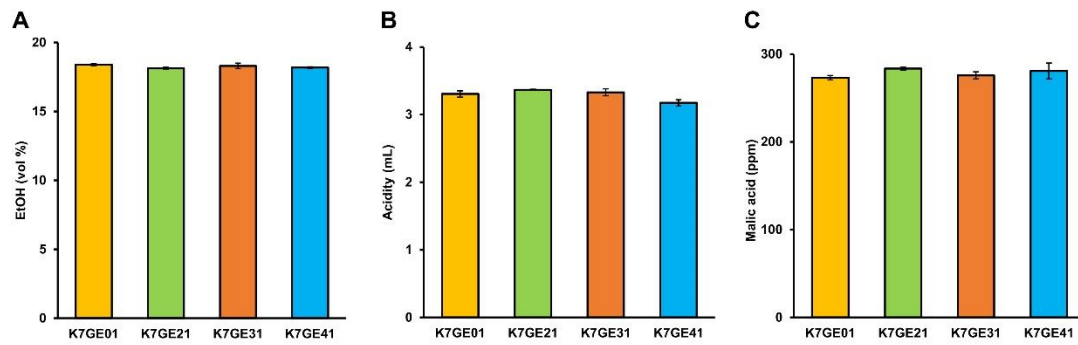
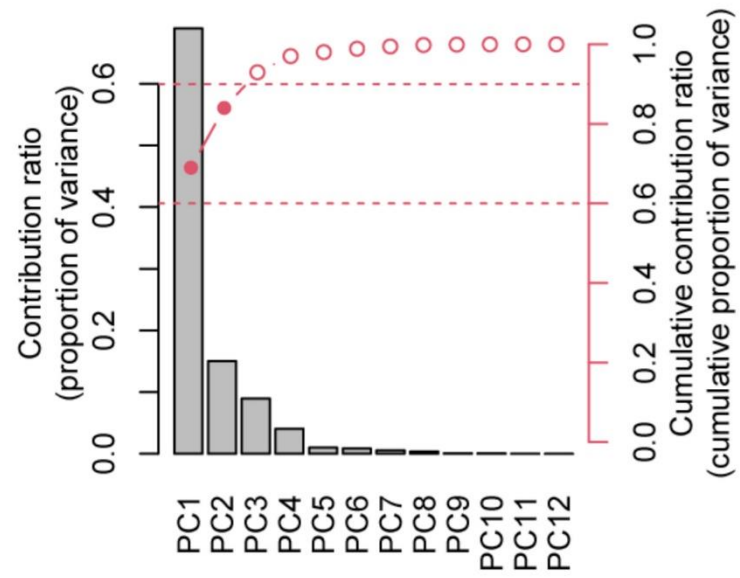
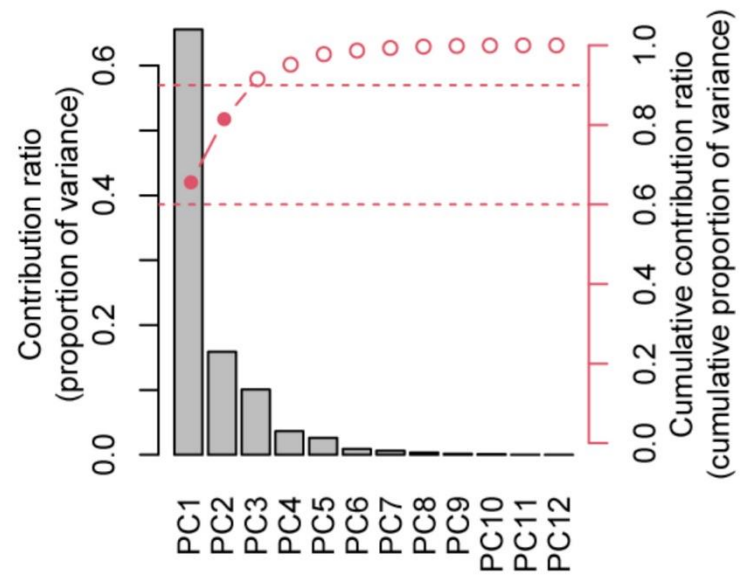


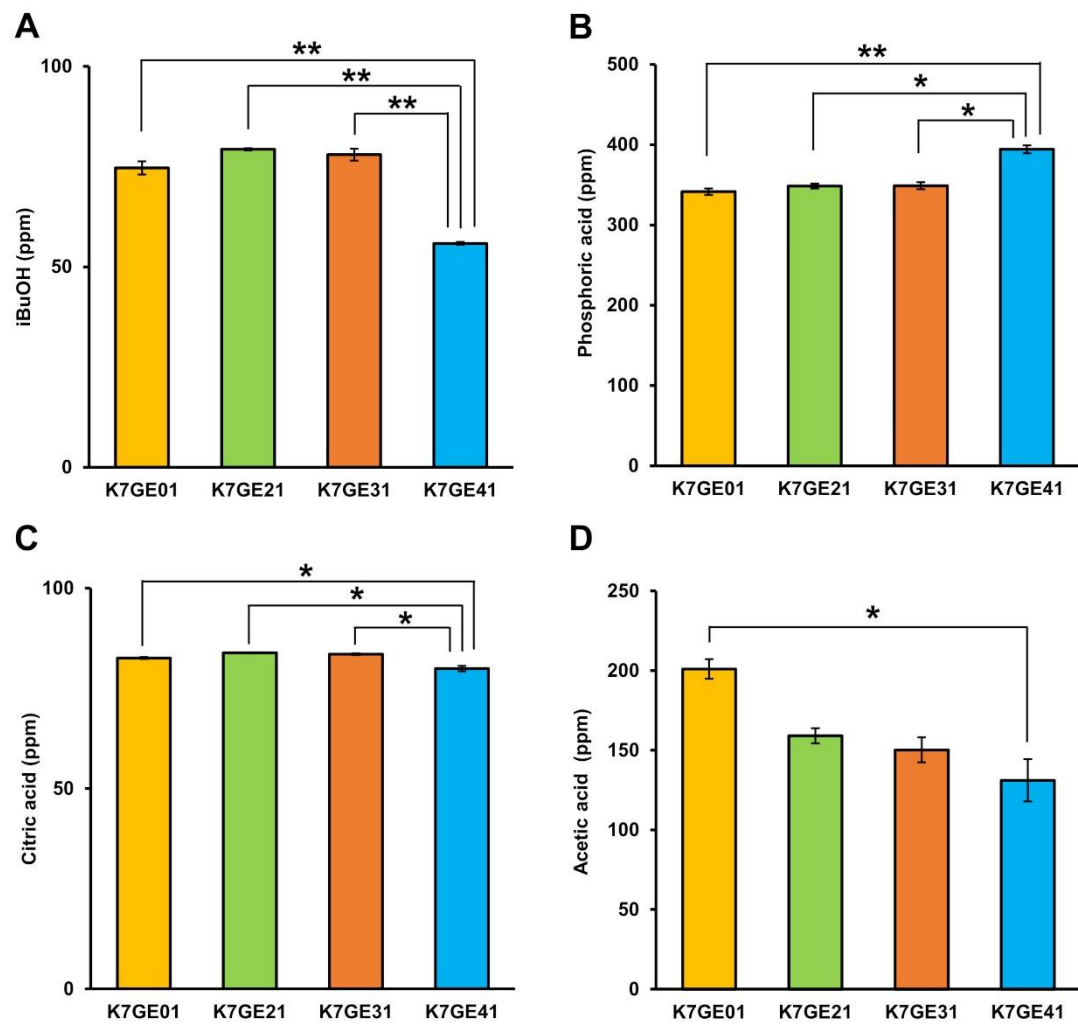
## Supplementary Figures



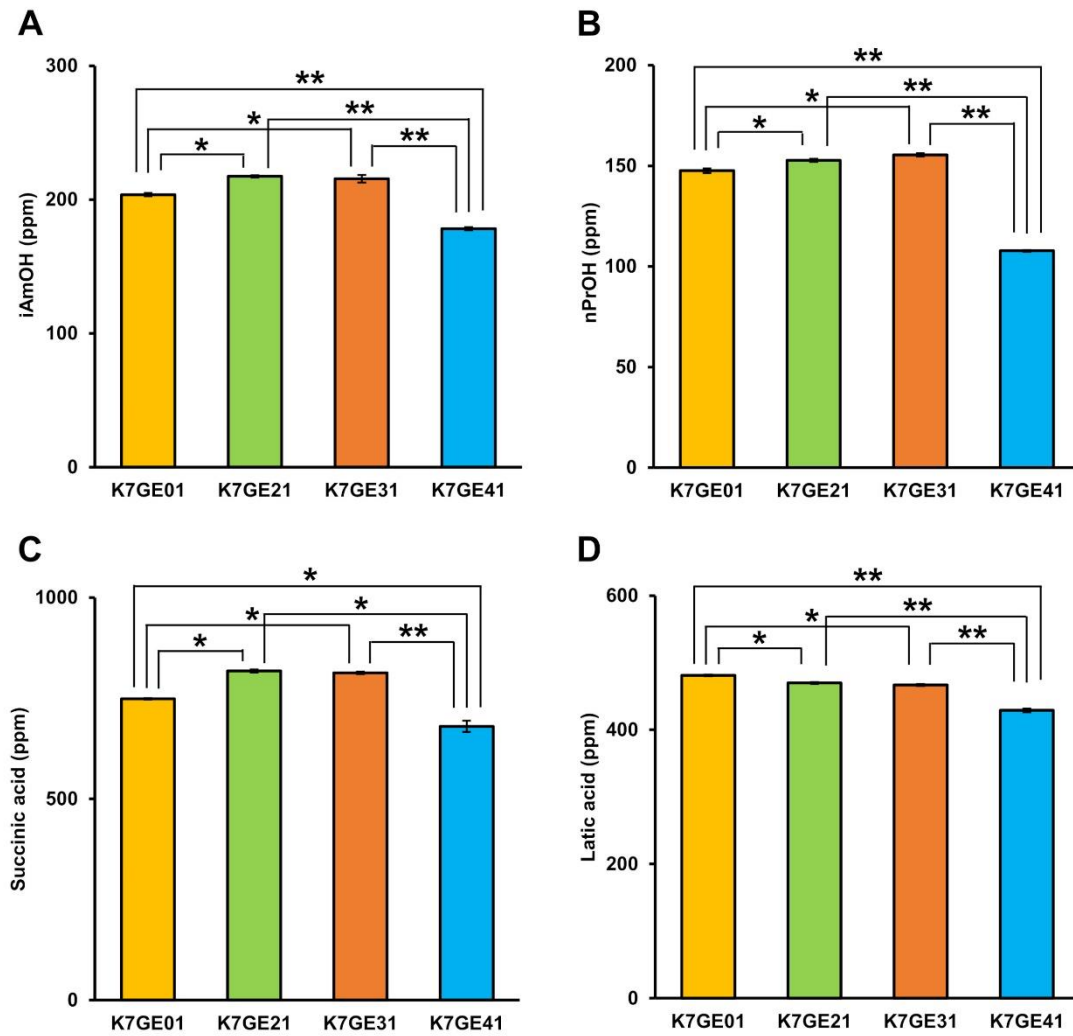
**Figure S1.** Measurement of ethanol (A), acidity (B), and malic acid (C) in sake made with genome-edited strains. Error bars indicate standard error (n = 3). Acidity value indicates volume of 0.1N NaOH required for neutralization of sake samples.

**A****B**

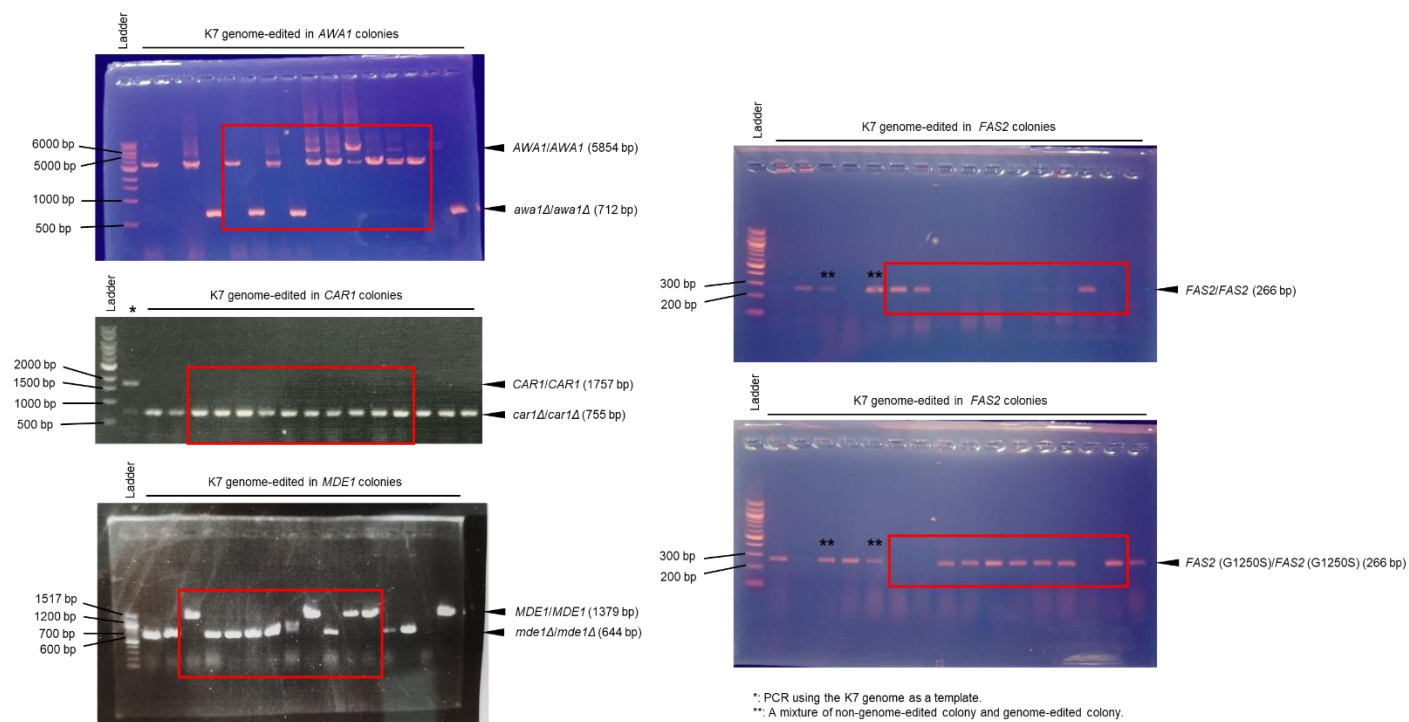
**Figure S2.** Cumulative contributions of principal components after PCA with 19 (A) and 16 (B) components.



**Figure S3.** Measurement of isobutyl alcohol (A), phosphoric acid (B), citric acid (C), and acetic acid (D) in sake made with genome-edited strains. Error bars indicate standard error (n = 3). Asterisks indicate Tukey's multiple comparison test (\* p < 0.05, \*\* p < 0.01).



**Figure S4.** Measurement of isoamyl alcohol (A), 1-propanol (B), succinic acid (C), and lactic acid (D) in sake made with genome-edited strains. Error bars indicate standard error ( $n = 3$ ). Asterisks indicate Tukey's multiple comparison test (\*  $p < 0.05$ , \*\*  $p < 0.01$ ).



**Figure S5.** Raw data of Figure 2B.