

**Fig. S3.** Acetate production of *Z. mobilis* wild-type ZM4 and mutant strains of 3.5M and 3.6M at pH 3.8 and 6.2 was measured when the glucose was completely consumed. At least two independent experiments were performed with similar results. Values are the mean of one representative experiment with three technical replicates. Error bars represent standard deviations. Statistics analysis was calculated using one-way ANOVA by GraphPad Prism 8.3.0. \*\* indicates adjusted *p*-value < 0.01.