

FIG.1

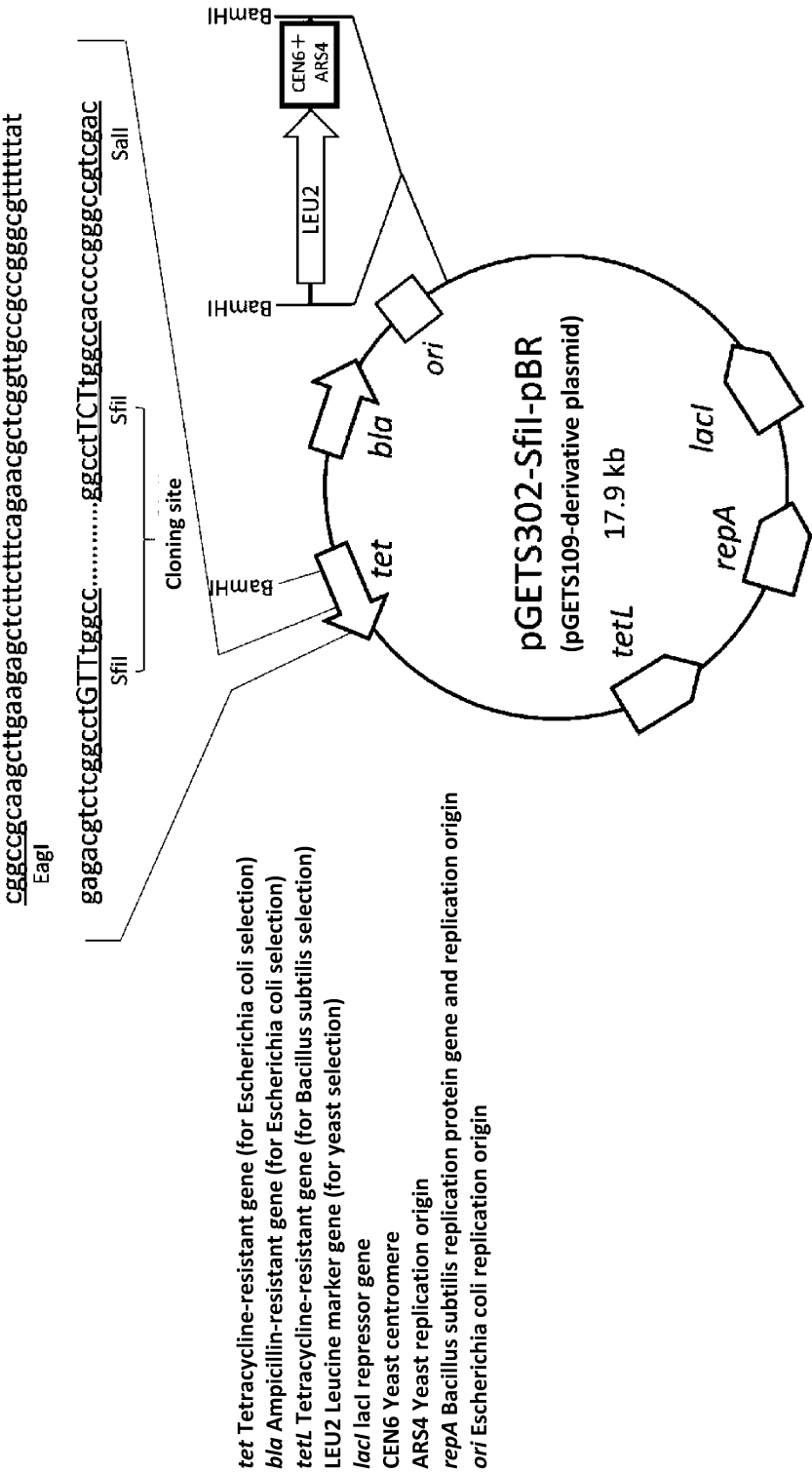
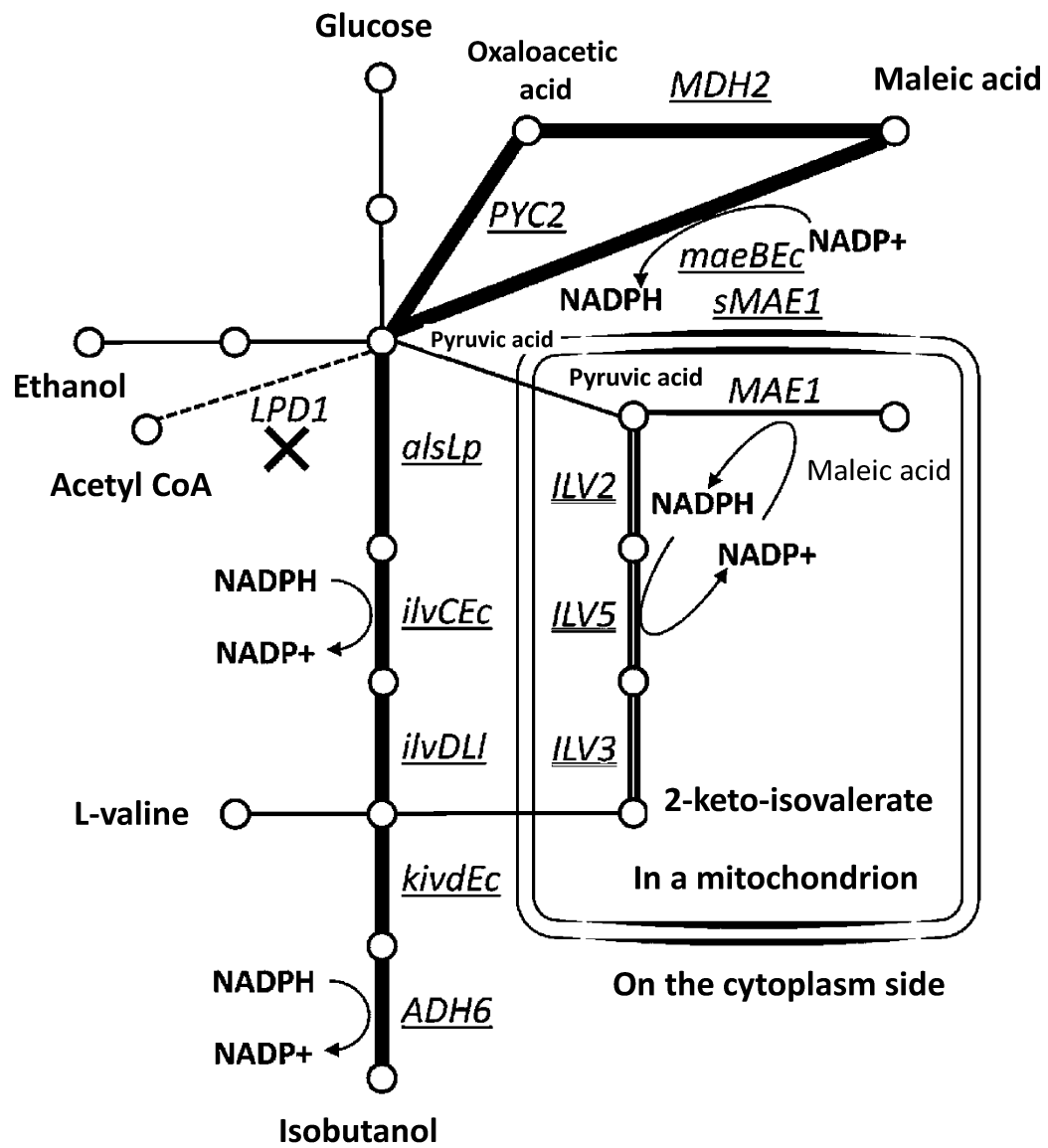




FIG.3



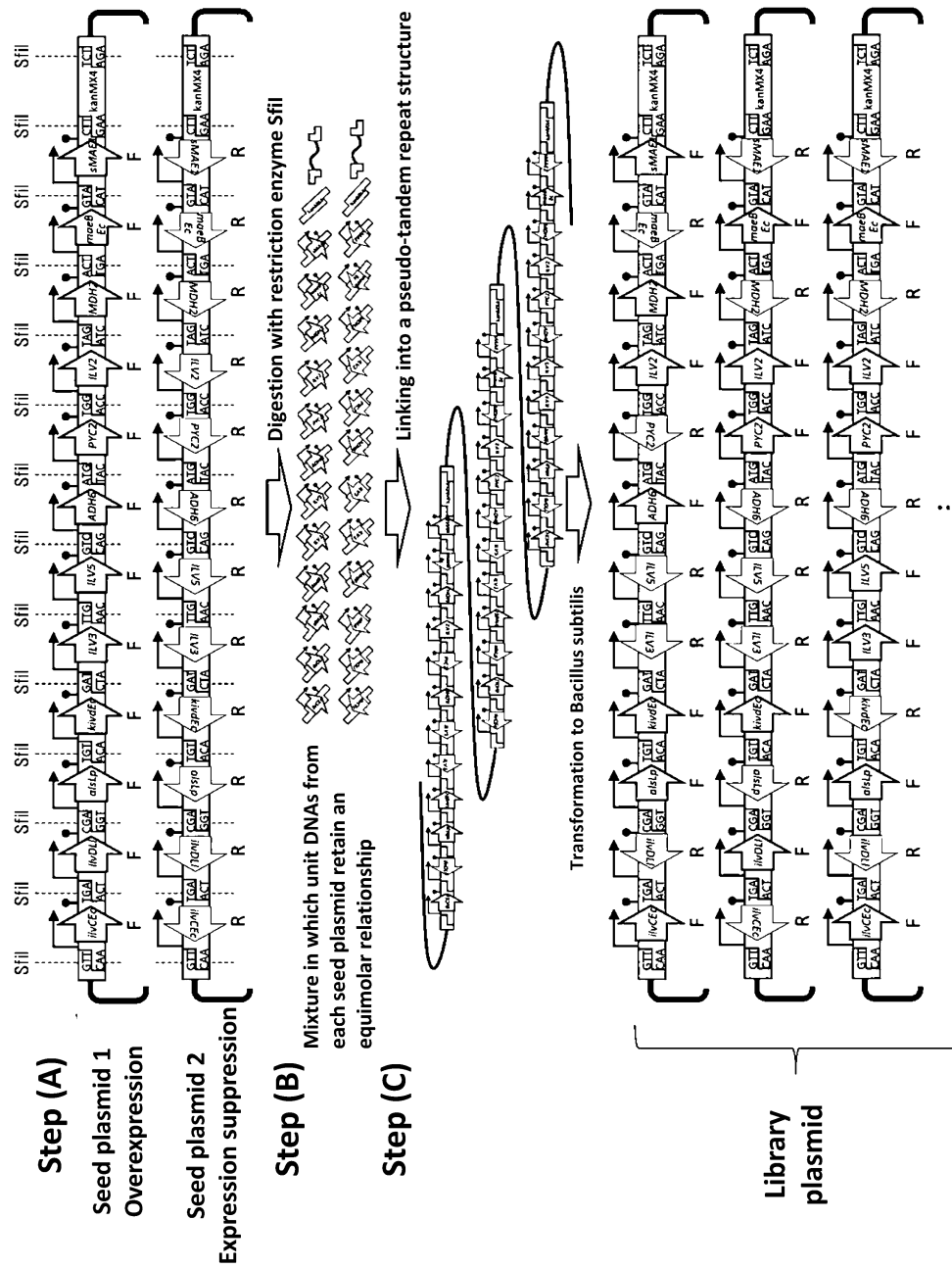
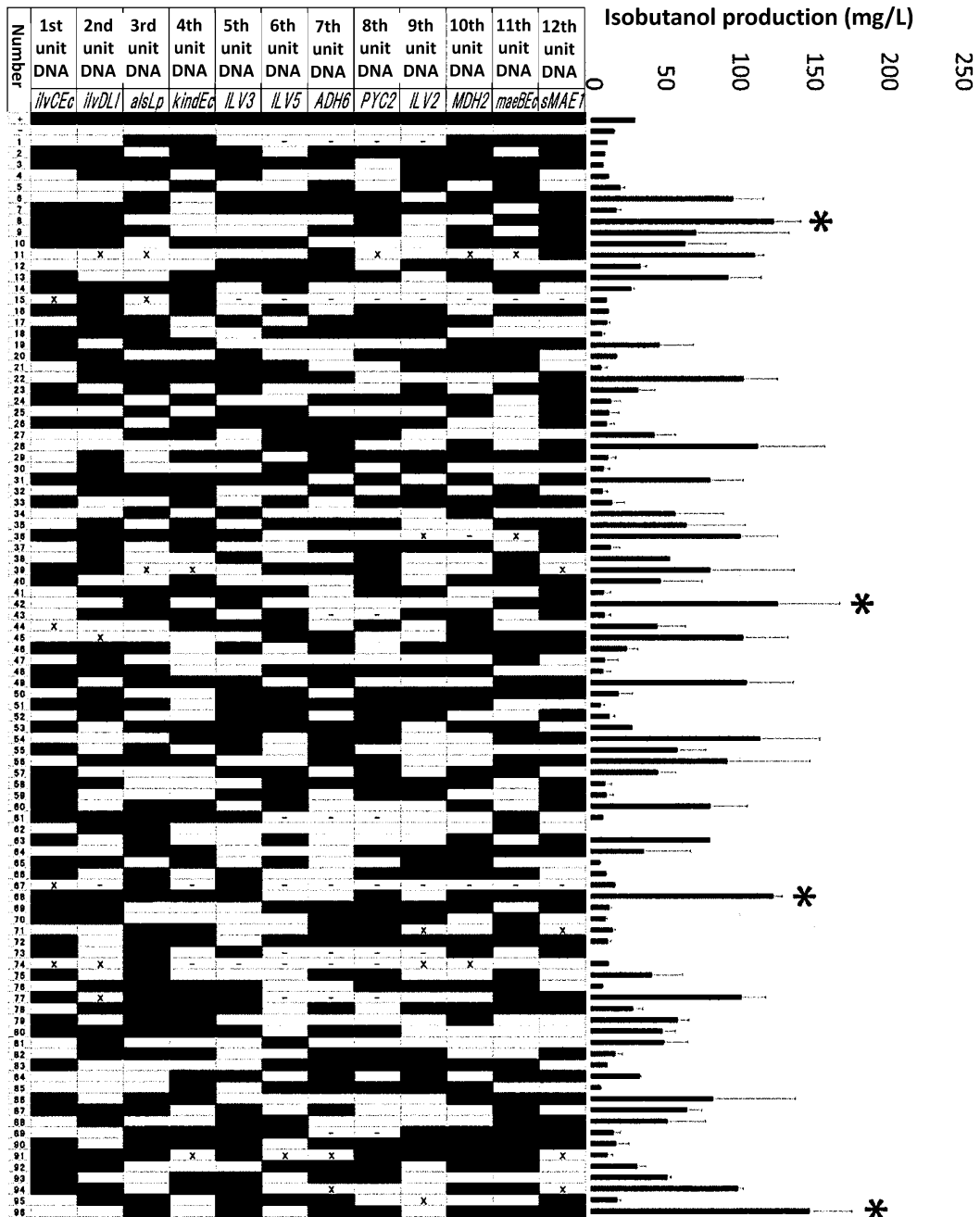


FIG.5



White indicates the forward (F) direction, black indicates the reverse (R) direction, × indicates a gene that could not be determined whether it is F or R, - indicates a loss of the unit DNA, and \* indicates a gene used for the seed plasmid for the second library. The isobutanol production is shown with the mean value and the standard deviation for the production in the medium in two or more times of independent culture.

FIG.6

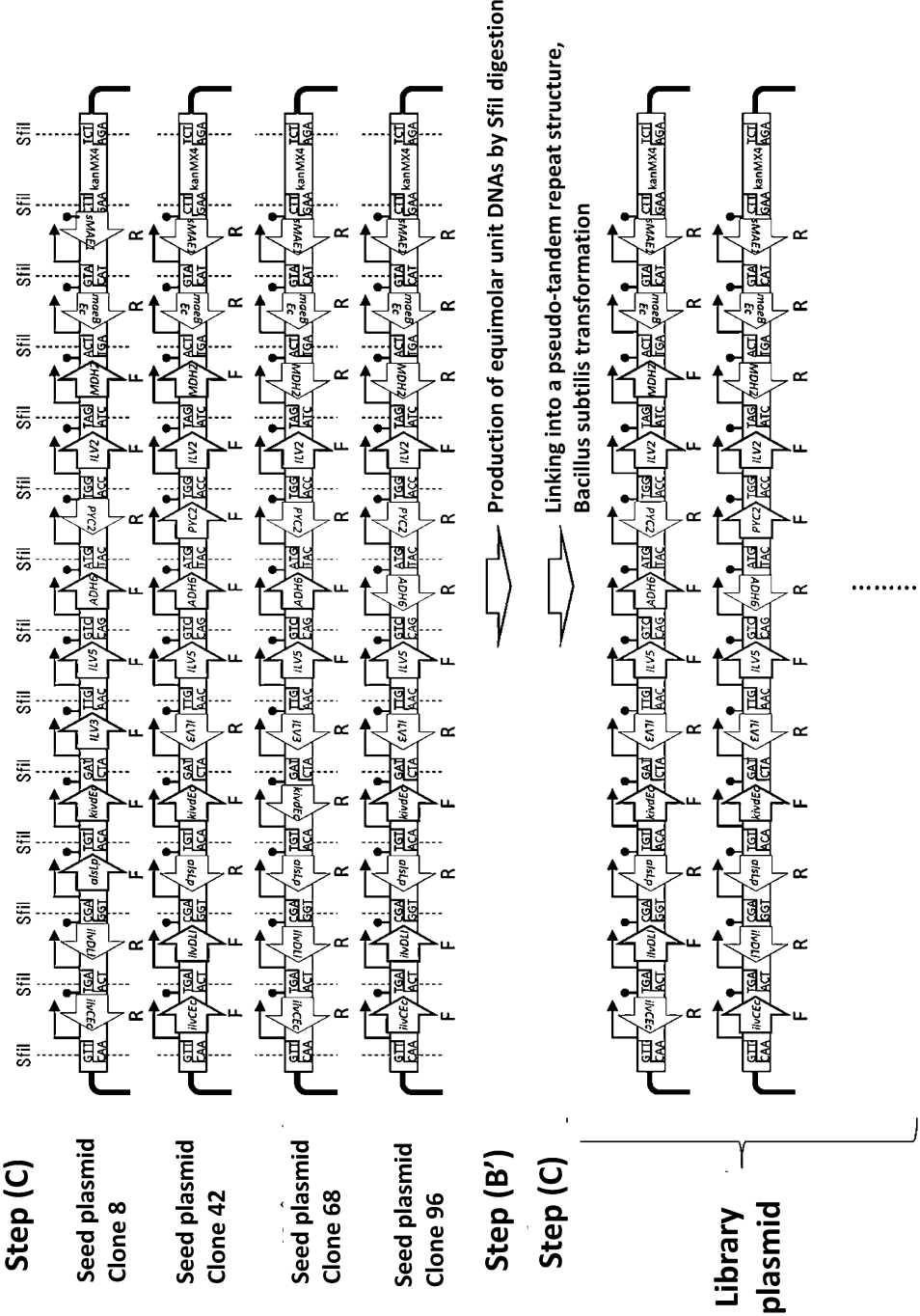
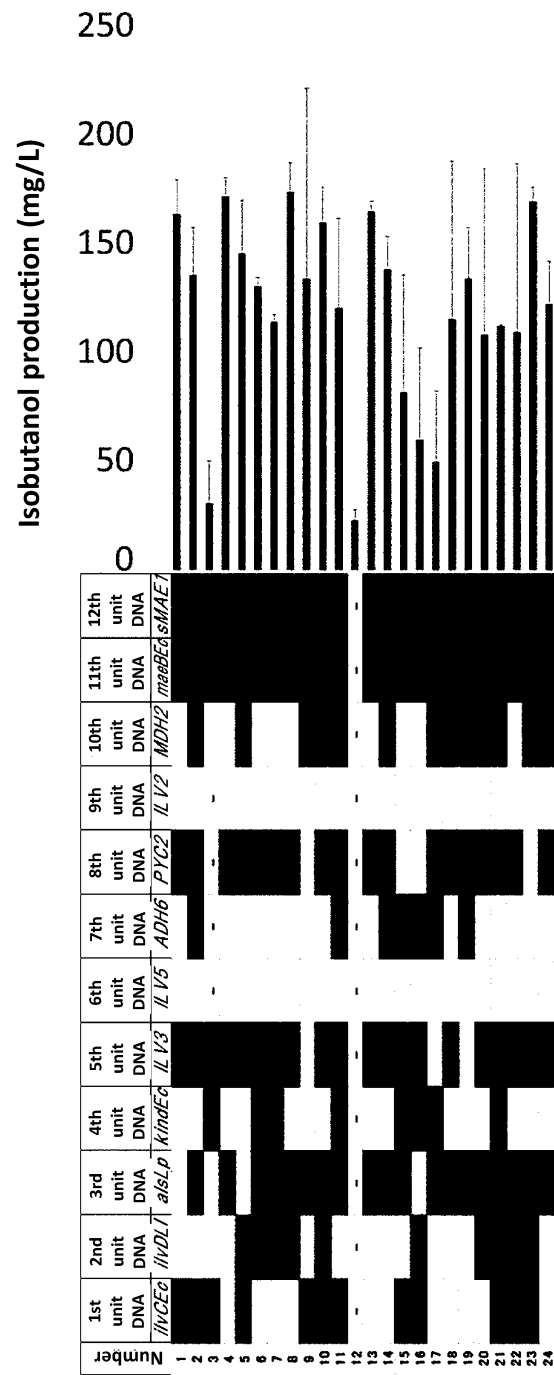


FIG.7



White indicates the forward (F) direction, black indicates the reverse (R) direction, and - indicates a loss of the unit DNA. The isobutanol production is shown with the mean value and the standard deviation for the production in the medium in three times of independent culture.