Expanding the molecular toolkit for the homoacetogen Clostridium ljungdahlii.

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Details

Abstract

Increasing interest in homoacetogenic bacteria for the production of biochemicals and biofuels requisites the development of new genetic tools for these atypical production organisms. An attractive host for the conversion of synthesis gas or electricity into multi-carbon compounds is Clostridium ljungdahlii. So far only limited achievements in modifying this organism towards the production of industrially relevant compounds have been made. Therefore, there is still a strong need for developing new and optimizing existing genetic tools to efficiently access its metabolism. Here, we report on the development of a stable and reproducible transformation protocol that is applicable to C. ljungdahlii and several other clostridial species. Further, we demonstrate the functionality of a temperature-sensitive origin of replication in combination with a fluorescence marker system as important tools for future genetic engineering of this host for microbial bioproduction.

Involved units

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