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POSTER PRESENTATIONS

[85] A BROAD-HOST-RANGE EXPRESSION PLATFORM TO FACILITATE CHASSIS SCREENING

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Microbes are extremely valuable for the bioproduction of proteins and compounds, with applications in the medical, environmental, and industrial fields. Host selection in biotechnological research is usually limited to a few model organisms, which are well-characterized and have an extensive molecular toolbox. However, model organisms can have endogenous physiology that is unfitting for the desired application, for example, notwithstanding the harsh conditions of industrial processing methods. Fortunately, nature has provided a vast landscape of organisms through evolution, each with unique phenotypic traits adapted to varied environments. The biotechnological field could greatly benefit from finding simple metabolic engineering approaches suitable for non-model organisms and from exploring their potentially advantageous traits, such as high temperature or low pH resistance. In this study, we provide a modular, single vector-based expression platform, centered around the well-known promoter system tetR-pTet, inducible by anhydrotetracycline. This system has been presented in several studies with different modifications to improve its functionality in specific organisms. However, here, we show that a single version can be compatible with a wide range of eubacteria. In all the studied microbes, the promoter system was shown to be tight and titratable. It enables easy screening of recombinant proteins and pathways in both mesophilic and thermophilic Gram-negative and Gram-positive hosts. Overall, this platform enables simple screening of heterologous expression and production in a broad variety of hosts, supporting the exploration of previously unconsidered hosts.