TECHNICAL PROTOCOL

FOR

Arabinose inducible
prokaryotic recombinase expression
plasmid

pSC101-BAD-Cre (A301)
pSC101-BAD-Dre (A302)
CONTENTS

1 Eppendorf tubes + manual
   1. recombinase expression plasmid pSC101-BAD-Cre or pSC101-BAD-Dre (0.2 µg/µl, 20 µl)
   2. This manual

Store tube at -20°C

Please read

The products listed in this manual are for research purposes only. They are not designed for diagnostic or therapeutic use in humans, animals or plants.

MTA

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**Short Description:**

Site-specific recombinases (SSRs) like Cre or Dre are valuable tools in functional genomics and have been applied in various organisms. They mediate recombination between target sites of 32-34 base pairs (bp) in length. The target sites, which are called loxP or rox sites are 13-14 bp palindromes separated by spacers (s. below).

\[
\text{loxP} \quad 5'-\text{ATAACTTCGTATAATGTATGCTATACGAAGTTAT}-3' \\
\text{rox} \quad 5'-\text{TAACTTTAAATAATGCCAATTATTTAAAGTTA}-3'
\]

Recognition sites of the site-specific recombinases Cre and Dre.

Cre recombinase, which was originally isolated from coliphage P1, mediates recombination between two loxP-sites through the spacer regions (e.g. removal of selectable genes). Dre was identified in a systematic search through P1-like phages for a Cre-like enzyme that had diverged sufficiently to recognize a recombination target site (RT) that is distinct from loxP (Sauer and Mc Dermott, 2004).

The combination of the arabinose inducible BAD promoter and the low-copy pSC101 plasmid backbone provide an excellent on-off regulation of Cre or Dre in *E. coli* as proved in a test experiment (Anastassiadis et al. 2009).

The plasmids carry a tetracyclin resistance gene for selection and are compatible with plasmids based on a ColE1 or p15A origin of replication and an ampicillin or kanamycin resistance marker.

While Cre/loxP is widely used in mouse genetics for conditional mutagenesis with many mouse lines available, a second highly efficient system like Dre/rox opens the door for more complex tasks such as a conditional mutagenesis of alternatively spliced exons. Cre/loxP can be used to remove one alternative exon and Dre/rox to remove the other one.
Literature:


Maps: