Electroporation Transformation

Introduction

Electroporation is a transformation technique used to introduce plasmid DNA into bacterial cells. A brief, high-voltage electrical pulse transiently increases the permeability of the cell membrane by forming temporary pores, allowing DNA molecules to enter the cells. Following electroporation, the cells are immediately transferred to a recovery medium, where the membrane can reseal and the cells can recover before antibiotic selection.

Reference:

Dower, W. J., Miller, J. F., & Ragsdale, C. W. (1988). High efficiency transformation of E. coli by high voltage electroporation. *Nucleic acids research*, *16*(13), 6127–6145. https://doi.org/10.1093/nar/16.13.6127

Materials

- target plasmid 2ul
- competent cell 250ul
- SOC 1ml
- electroporation machine

Procedure

Electroporation Transformation

SOC preparation

1. Dispense the contents into small tubes inside Laminar Flow Hood.

setting

2. . Plug in the machine and turn on it

3. Set Ec2

opertation

4. Mix 50 ul of the competent cell and 2ul DNA solution (plasmid) in a fresh eppendorf (1.5ml tube)

5. Pipetting

6. Put the cuvette in ice for 30s
7. Transfer the mixture 50ul into chilled electroporation cuvette (2mm gap), and pulse (Ec 2).
8. Add 1ml of SOC immediately as possible after the pulse.
9. Pipetting
10. Incubate it for 1 hour at 37 ℃.
11. Plate the culture on a selection plate, and incubate.