SmartCells™

High Efficiency Chemically Competent *E. coli*

A division of Gene Therapy Systems, Inc.

Cat. #	Contents	Quantity
C101020	SmartCells™ Chemically Competent *E. coli* (>1 x 10^9 cfu/ µg)	20 x 50 µl
	SOC Medium	6 ml
	pUC19 Positive Control Plasmid	20 µl (10pg/ µl)
C101120	SmartCells™ F' Chemically Competent *E. coli* (>1 x 10^9 cfu/µg)	20 x 50 µl
	SOC Medium	6 ml
	pUC19 Positive Control Plasmid	20 µl (10pg/ µl)

Shipping	Shipped on Dry Ice
Storage	Store cells at -70°C; store the SOC Medium at room temperature. Stable for 6 months.

Related Products	Catalog #
EZ-Spread ™ Beads, Single-Use Tubes, 50 tubes	C400050
EZ-Spread ™ Beads, Dispenser Bottle	C400100

Introduction: Most commercially available chemically competent cells, regardless of claimed efficiency, frequently underperform in real transformation experiments, especially when using ligation mixtures instead of supercoiled DNA. SmartCells™ chemically competent *E. coli* are prepared by a unique procedure to warrant the highest and most robust transformation performance under diverse conditions. There is no need to dilute or purify your ligation mix before transformation. If needed, over 10 µl of full strength ligation mix can be added to 50 µl competent cells without significantly compromising transformation results. SmartCells™ carry genotypes suitable for most cloning needs such as blue/white selection, generation of plasmid vector based libraries or gene banks, and ability to be transformed efficiently with large plasmids. SmartCells™ F' is also available for use with M13 cloning vectors.

SmartCells™ F⁻: *recA1 endA1 hsdR17 supE44 thi-1 gyrA96 relA1 ϕ80lacZΔM15 Δ(lacZYA-argF)U169*
SmartCells™ F': *recA1 endA1 hsdR17 supE44 thi-1 gyrA96 relA1 ϕ80lacZΔM15 Δ(lacZYA-argF)U169*

METHODS AND PROCEDURES

A. Transformation Protocol

1. Thaw one tube of the SmartCells™ competent cells on ice (10-15 minutes).
2. Add 1-10 µl of ligation mix to the cells; mix gently and incubate on ice for 15 to 30 minutes.
3. Heat the mix at 42ºC for 45 seconds.
4. Add 0.25 ml room temperature SOC medium and incubate at 37ºC for 1 hour in an air incubator. Shaking tubes horizontally at 225 rpm is recommended for the best efficiency.
5. Dilute transformation reaction if necessary and spread 100 µl of transformed cells on LB/Agar plates containing appropriate selection (e.g. ampicillin or kanamycin). Alternatively, if maximum numbers of colonies are desired, collect cells by spinning in a microfuge for 10 seconds. Resuspend cell pellet in 50 µl SOC and spread on the agar plates containing antibiotics.
6. Incubate overnight at 37ºC.

B. Notes

- It is not necessary to dilute your ligation mix with TE. In our test, up to 10 µl of undiluted ligation mix could be used without significantly compromising the transformation efficiency.
- Transformation efficiencies for ligation of inserts to vectors will be 2 - 5 fold lower than obtained with supercoiled plasmids.
- If unexpectedly lower number of colonies are observed, we recommend to test the efficiency of competent cells using the provided supercoiled pUC19 plasmid DNA as follows:
  1. Transform 5 µl (50 pg) pUC19 into 50 µl of competent cells.
  2. Repeat steps 2-6.
  3. Dilute the transformation reaction 50 fold with SOC and plate 30 µl on a LB agar plate containing 100 µg/ml ampicillin.
  4. Incubate overnight at 37ºC and count colonies. Calculate transformation efficiency as follows:

$$\frac{\text{Number of Colonies}}{\text{50 pg pUC19}} \times \frac{1 \times 10^6 \text{ pg}}{\mu\text{g}} \times \frac{300\ \mu\text{l}}{30\ \mu\text{l plated}} \times 50^{\dagger} = \text{CFU}/\mu\text{g}$$

† 50 is the dilution factor

LIMITED LICENSE: The purchase price paid for the SmartCells™ Competent *E. coli* Kits (hereto "SmartCells") grants end users a non-transferable, non-exclusive license to use the kits and/or their components for **internal research use only** as described in this manual; in particular, research use only excludes and without limitation, resale, repackaging, or use for the making or selling of any commercial product or service without the written approval of Genlantis, a division of Gene Therapy Systems, Inc. (GTS) -- separate licenses are available for non-research use or applications. SmartCells and/or its components are not to be used for human diagnostic or included/used in any drug intended for human use. Care and attention should be exercised in handling the kit components by following appropriate research laboratory practices.
Purchasers may refuse this license by returning the enclosed materials unused. By keeping or using the enclosed materials, you agree to be bound by the terms of this license. The laws of the State of California shall govern the interpretation and enforcement of the terms of this License.

Telephone: (858) 457-1919 • (888) 428-0558 (U.S. Toll-free) • Fax: 858-623-9494 • www.genlantis.com