

A Faster and Easier Method for Gene Cloning & Expression

Various strains of *E. coli* competent cells are widely used for gene cloning and expression. However, gene cloning strains typically have much higher transformation efficiencies than gene expression strains. For example, Lucigen's *E. coli*[®] ELITE ($\geq 2 \times 10^{10}$ cfu/ μ g) and SUPREME ($\geq 4 \times 10^{10}$ cfu/ μ g) Electrocompetent Cells offer the highest transformation efficiencies available for cloning. Efficiencies of standard gene expression strains like BL21(DE3) are orders of magnitude lower. This transformation efficiency "gap" necessitates the cumbersome and time-consuming procedure of transferring plasmids from the cloning strain into the expression strain.

Lucigen's new *E. coli* EXPRESS BL21(DE3) Electrocompetent Cells close this gap by offering a transformation efficiency of $\geq 5 \times 10^9$ cfu/ μ g: 25-1,000 fold higher than BL21(DE3) cells from any other supplier (Figure 1). With *E. coli* EXPRESS, high efficiency cloning and expression can be done in the same cell, eliminating the need for plasmid transfer and saving days of work (Figure 2). EXPRESS Cells offer high levels of IPTG-inducible protein expression using any plasmid cloning vector with a T7 promoter, including pET vectors and Lucigen's pcrSMART[™] or pSMART[®]-cDNA vectors (Figure 3). The performance benefits of *E. coli* EXPRESS Electrocompetent Cells are particularly useful in construction of complex expression libraries.

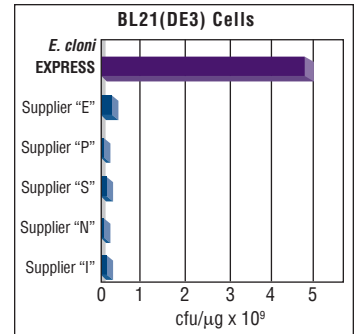


Figure 1. Transformation efficiency comparison of commercially available BL21(DE3) competent cells.

Figure 2. Comparison of cloning and protein expression procedures.

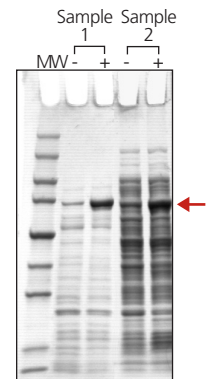
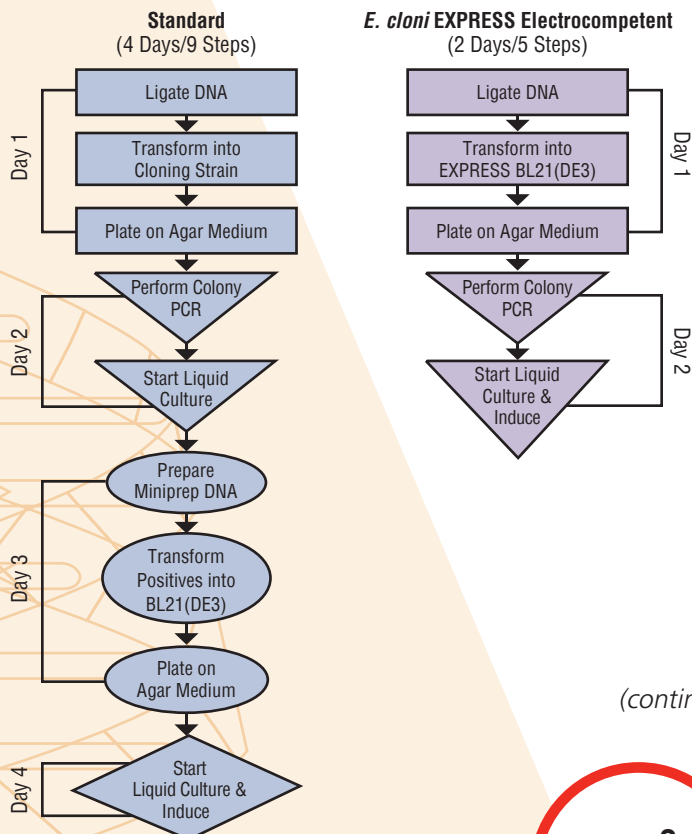


Figure 3. A representative gene was cloned into a standard T7 promoter vector, and the DNA was transformed into *E. coli* EXPRESS BL21(DE3) Electrocompetent Cells. The SDS-PAGE gel shows protein expression in log phase cultures induced with (+) and without (-) IPTG in presence of 0.2% glucose (w/v). In this figure, MW is protein molecular weight markers, lanes 2 and 3 are sample 1, and lanes 4 and 5 are sample 2.

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Advantages of EXPRESS Electrocompetent Cells:

- Highest yields of recombinants
- Fast construction of complex expression libraries
- Stable cloning of genes
- Excellent results with any T7 expression vector

Two other versions of EXPRESS Electrocompetent Cells are also available for specialized applications. *E. coli* EXPRESS BL21(DE3) pLysS Cells produce T7 lysozyme to repress low-level transcription from the T7 RNA promoter prior to IPTG induction, helping to stabilize inserts coding for deleterious products. EXPRESS pLysE Cells have a higher level of repression by T7 lysozyme, offering the greatest control over expression of inserts. Because transformation efficiencies of the EXPRESS pLys strains are lower, EXPRESS BL21(DE3) Electrocompetent Cells are recommended for most applications. The pLys strains should be used for expression of proteins that may be toxic to *E. coli*.

EXPRESS Chemically Competent Cells

All three *E. coli* EXPRESS strains are also available as chemically competent cells. With a transformation efficiency of $\geq 1 \times 10^7$ cfu/ μ g and very economical prices, EXPRESS Chemically Competent Cells offer the best value available for routine protein expression work.

ORDER INFORMATION

Kit Contents: *E. coli* EXPRESS Competent Cells in DUO packaging (2 rxns/tube), Recovery Medium, pUC19 Positive Control Plasmid, and a complete protocol. ■

Products	Cat. No.	Size
Electrocompetent Cells		
EXPRESS BL21(DE3) Cells ($\geq 5 \times 10^9$ cfu/ μ g)	60300-1 60300-2	12 reactions 24 reactions
EXPRESS BL21(DE3) pLysS Cells ($\geq 2 \times 10^8$ cfu/ μ g)	60311-1 60311-2	12 reactions 24 reactions
EXPRESS BL21(DE3) pLysE Cells ($\geq 2 \times 10^8$ cfu/ μ g)	60324-1 60324-2	12 reactions 24 reactions
Chemically Competent Cells		
EXPRESS BL21(DE3) Cells ($\geq 1 \times 10^7$ cfu/ μ g)	60401-1 60401-2 60401-3	12 reactions 24 reactions 48 reactions
EXPRESS BL21(DE3) pLysS Cells ($\geq 1 \times 10^7$ cfu/ μ g)	60413-1 60413-2 60413-3	12 reactions 24 reactions 48 reactions
EXPRESS BL21(DE3) pLysE Cells ($\geq 1 \times 10^7$ cfu/ μ g)	60425-1 60425-2 60425-3	12 reactions 24 reactions 48 reactions

