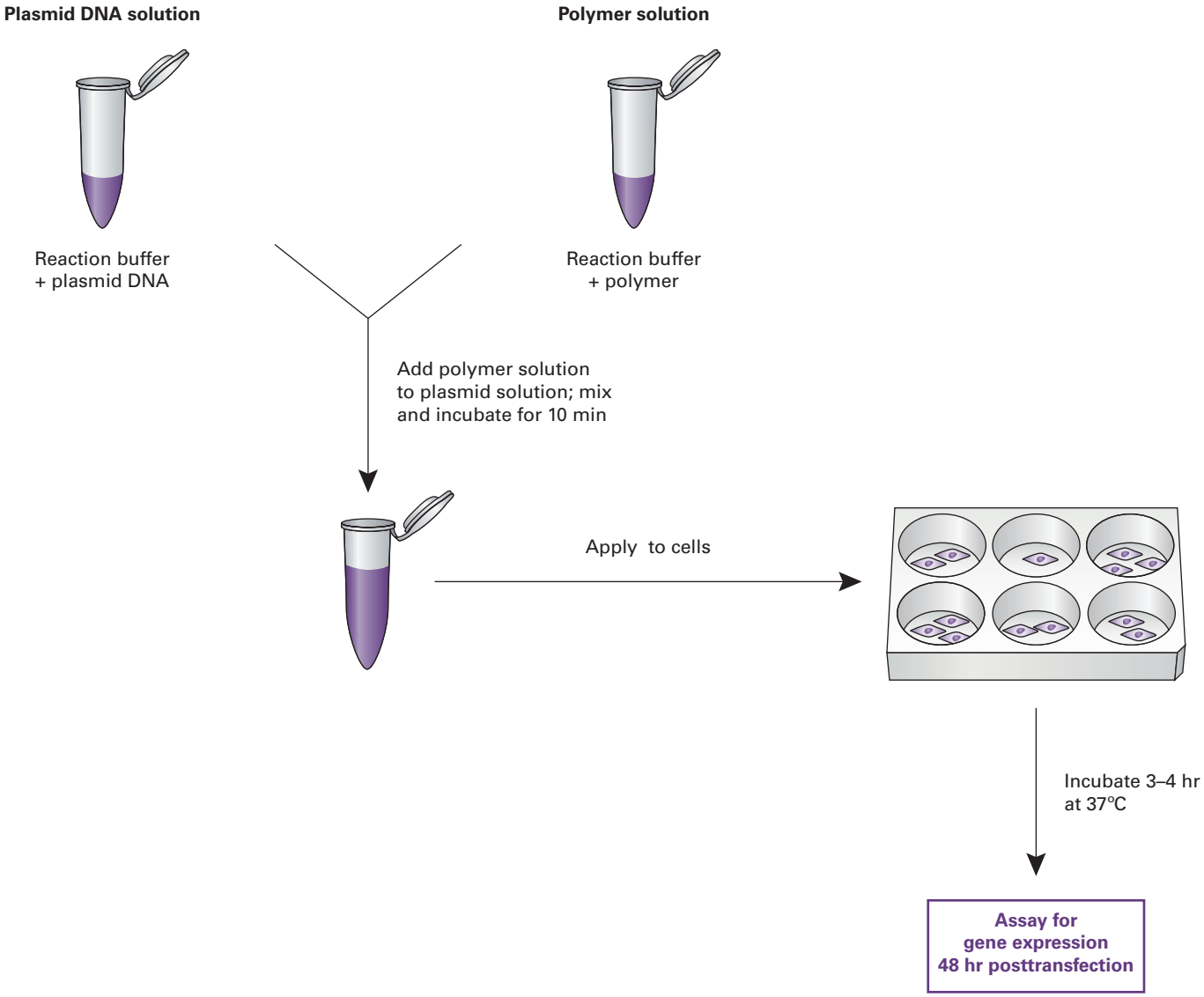
Superior Transfection with Biodegradable Nanoparticles

- **Efficient transfection in a wide range of cell types**
- **Low cytotoxicity**
- **Simple, serum-compatible protocol**

Xfect™ the unexpected!

Are you looking for a better transfection reagent? Clontech has the answer: more than 2,300 polymers were tested to bring you **Xfect** and **Xfect Stem.** These novel transfection reagents are based on biodegradable nanoparticles that permit superior efficiency of plasmid DNA transfection into mammalian cells. For added ease of use, transfections can be carried out entirely in the presence of serum. Xfect shows high efficiency over a broad range of cell types, while Xfect Stem meets the highly specialized requirements for mouse embryonic stem cell (mES) transfections.



The simple Xfect transfection protocol is completely serum-compatible.

Innovative Transfection Solutions

Effective, nontoxic DNA transfer is a vital first step in basic and applied research, including studies of gene regulation, protein expression, and function, as well as the development of transgenic organisms and therapeutic gene delivery. Xfect technology was developed following a screen of more than 2,300 candidate polymers to identify novel biodegradable nanoparticles that facilitate excellent transfection efficiency. Clontech then optimized the lead compounds from this screen to create the Xfect and Xfect Stem transfection reagents.

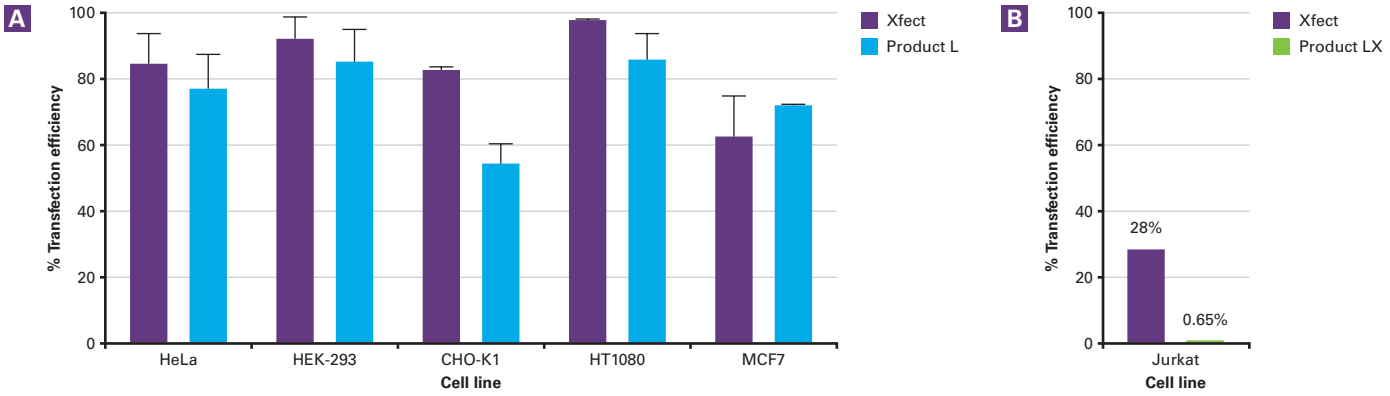


Figure 1. Obtain high transfection efficiencies in many cell types with Xfect, including hard-to-transfect cells. Xfect and Competitor Product L (**Panel A**) or Xfect and Competitor Product LX (**Panel B**) were used according to their respective protocols to transfect the cell lines listed above with plasmid DNA encoding AcGFP1, in a 6-well format. 48 hr posttransfection, AcGFP1 expression was assessed by flow cytometry in order to determine transfection efficiency.

Highly Efficient—with Low Cytotoxicity in Many Cell Types

When we tested the performance of Xfect against competitor reagents for several commonly used cell lines, we obtained superior transfection efficiency with Xfect compared to a leading competitor's Product L in HeLa, HEK-293, CHO-K1, and HT1080 cells (Figure 1, Panel A). Xfect was also less cytotoxic than Product L, which led to higher viability in several commonly used cell lines (Table I).

Working with Difficult-to-Transfect Cells?

We also tested Xfect on Jurkat cells, which are notorious for their low transfection efficiency. Xfect displayed a >40-fold higher transfection efficiency than a leading competitor's Product LX (Figure 1, Panel B).

Table I: Cells Transfected with Xfect have High Viability

	Xfect (%)	Product L (%)
HeLa	79.4% ± 17.9	53.2 ± 26.7
HEK-293	63.5 ± 12.5	52.3 ± 12.4
CHO-K1	86 ± 0.8	90.9 ± 10.7
MCF7	51.4 ± 10.6	29.7 ± 21.3

Working with Mouse Embryonic Stem Cells?

While transfection reagents are generally applicable to a wide variety of DNAs and target cells, optimized reagents designed to work with specific cell types can be beneficial. For this reason, we have developed Xfect Stem, a reagent that provides high performance with mES cells. In a head-to-head comparison with three other transfection reagents from leading competitors, Xfect Stem provided the best transfection efficiency in both the ES-E14TG2a and ES-D3 mouse pluripotent embryonic stem cell lines (Figure 2).

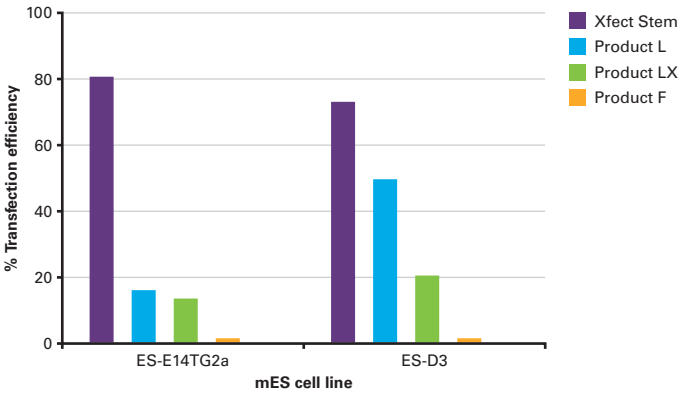


Figure 2A. Xfect Stem provides superior transfection efficiency in mES cells. Xfect Stem and three competitor reagents were used according to their respective protocols to transfect the cell lines listed above using plasmid DNA encoding AcGFP1, in a 6-well format. 48 hr posttransfection, AcGFP1 expression was assessed by flow cytometry in order to determine transfection efficiency.

Xfect and Xfect Stem form biodegradable nanoparticles which provide a new and highly efficient means of introducing exogenous DNA into mammalian cells, using an easy transfection protocol. Each reagent is available in 100 and 300 reaction sizes.

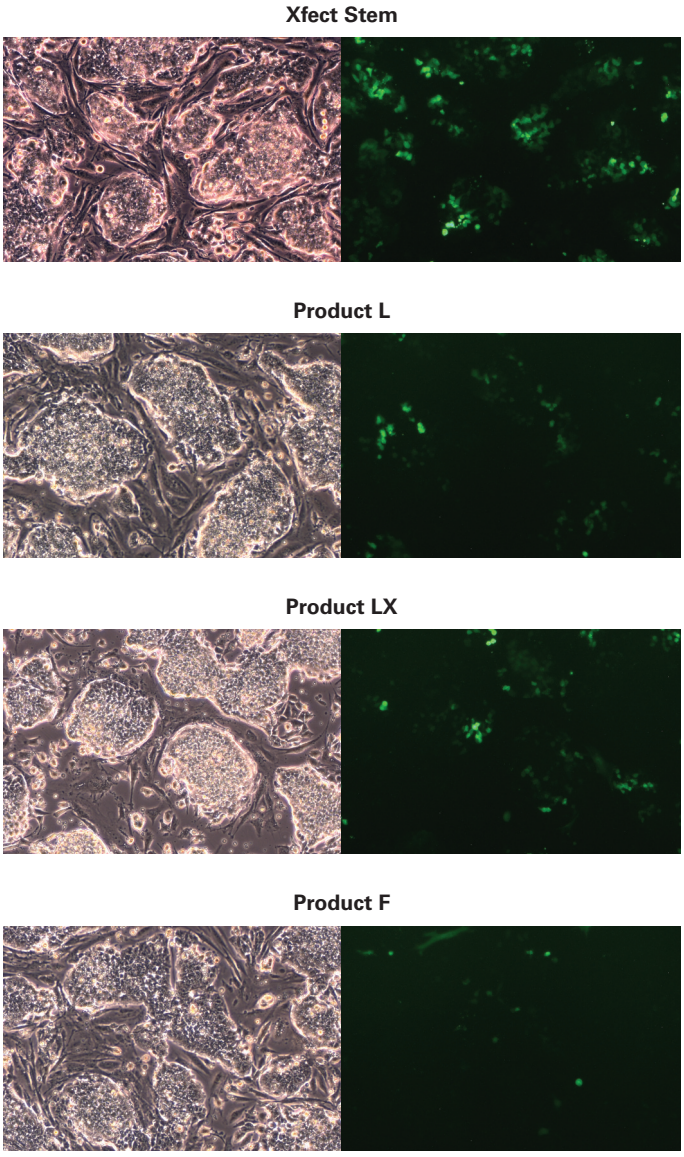


Figure 2B. Xfect Stem exhibits far higher transfection efficiency than leading competitor reagents. ES-E14TG2a mES cells were transfected in a 6-well plate format with a plasmid expressing AcGFP1 using Xfect Stem, Product L, Product LX, or Product F according to each manufacturer's recommended protocol. 48 hr post-transfection, the cells were imaged using white light (lefthand images) and by fluorescence microscopy using a Zeiss® Axioskop™ microscope equipped with a GFP filter (righthand images).

Ordering Information

Product	Size	Cat. No.	
Xfect	100 rxns 300 rxns	631317 631318	NEW!
Xfect Stem	100 rxns 300 rxns	631320 631321	NEW!

Notice to Purchaser

Please see the Transfection Polymers licensing statement at **www.clontech.com/licensing**