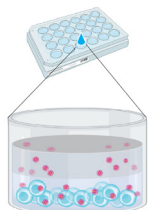


Lenti-X™ T-Cell Transduction Sponge

Streamline T-cell activation and lentiviral transduction in a single step

The Lenti-X T-Cell Transduction Sponge is a lyophilized alginate-based cake with a macroporous structure infused with an optimized blend of recombinant human IL-2 and anti-human CD3 and CD28 antibodies. This dissolvable microfluidic transduction system gently colocalizes T cells and lentivirus in a well, enhancing transduction efficiency and enabling T-cell activation and transduction in one step.

Small molecule/chemical approach



- ✗ Spinoculation required
- ✗ Unknown downstream impact of chemicals on cells
- ✗ Limited transduction efficiency gains due to minimal colocalization

Transduction sponge approach



- ✓ High transduction efficiency with cell and virus colocalization
- ✓ Spinoculation- and chemical-free method, which is gentle on cells
- ✓ Compatible with unstimulated T cells or PBMCs (up to 10^7 cells in a single well)

Sponge structure

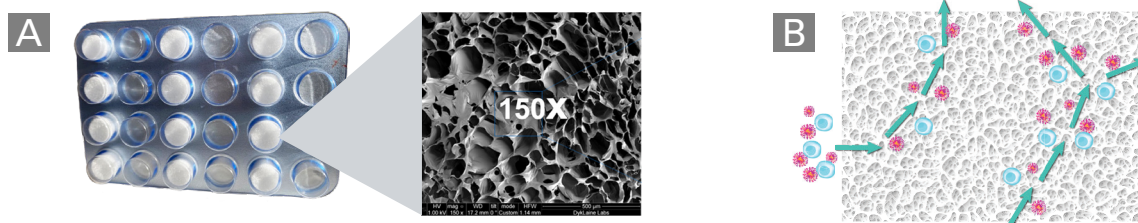


Figure 1. Convenient format for use with a 24-well tissue culture plate. **Panel A.** The Lenti-X T-cell Transduction Sponge is a lyophilized alginate-based cake with a structure of ~0.2 cm in diameter and ~0.5 cm in depth to which a mixture of cells and virus are added, resulting in high lentivirus transduction efficiency. Every sponge features a complex microfluidic pore structure with pore sizes ranging from 20–300 μm . The scanning electron microscopy image shown is at 150X magnification. **Panel B.** Schematic showing the macroporous structure, which enables microfluidics-based colocalization of the cells and virus.

Simple workflow

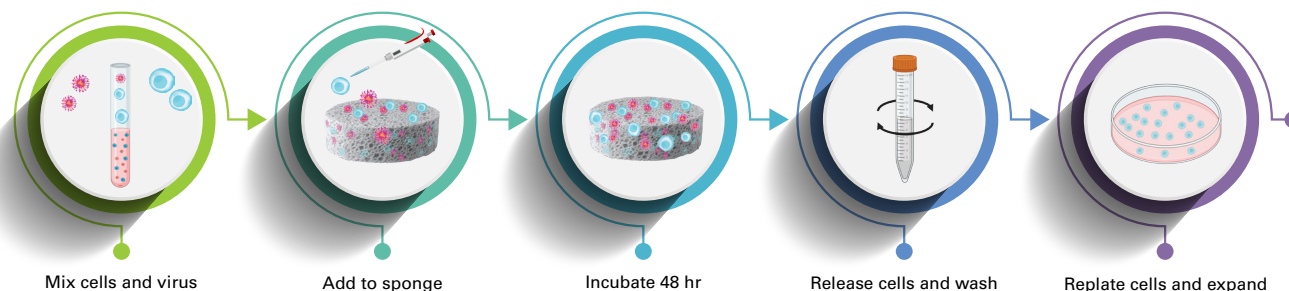


Figure 2. Simple T-cell activation and transduction workflow using the Lenti-X T-Cell Transduction Sponge. Cells and virus are mixed prior to application to the sponge. The transduction mixture is incubated for 1 hr, followed by the addition of media and incubation for 48 hr. No spinoculation is required. After incubation, healthy, transduced cells are released using an optimized Release Buffer (included with the kit) that depolymerizes the alginate matrix. Cells are then ready for subsequent analysis or continued culture.

Lenti-X T-Cell Transduction Sponge

Consistent activation and transduction

Efficient T-cell activation across a range of MOI values

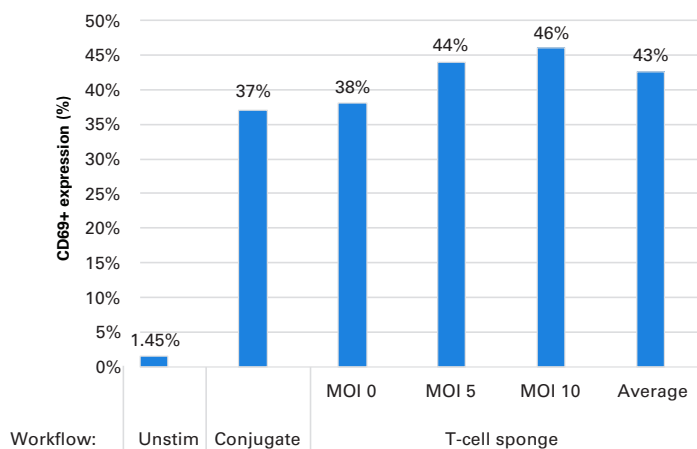


Figure 3. Efficient T-cell activation with the Lenti-X T-Cell Transduction Sponge. 4×10^6 human primary T cells were mixed with a lentivirus expressing ZsGreen1 at the indicated multiplicities of infection (MOIs) and added to the Lenti-X T-cell Transduction Sponge ("T-cell sponge") or treated with CD3/CD28 ImmunoCult reagent ("Conjugate"). Unstimulated cells were used as a control ("Unstim"). After 48 hr, treated cells were assayed for CD69 expression by FACS analysis.

Effective transduction of human primary T cells

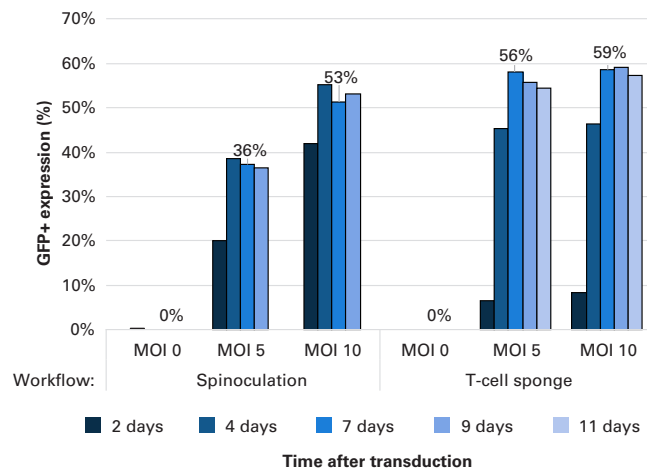


Figure 4. Effective T-cell transduction with the Lenti-X T-Cell Transduction Sponge. 4×10^6 human primary T cells were mixed with a lentivirus expressing ZsGreen1 at the indicated MOI and added to the Lenti-X T-Cell Transduction Sponge ("T-cell sponge"). Spinoculated samples were activated with CD3/CD28 ImmunoCult reagent for 2 days, then exposed to the lentivirus with polybrene (8 μ g/ml) and centrifuged at 1,500g for 90 min ("Spinoculation"). Transduction efficiency was assessed by FACS analysis for ZsGreen1 expression at the indicated time points. Displayed percentages show GFP+ expression at seven days.

High viability of human primary T cells after transduction

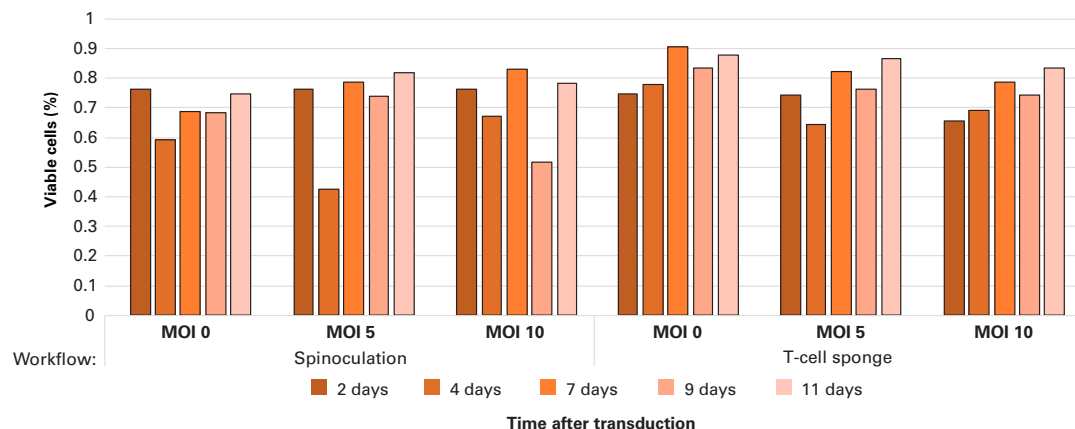


Figure 5. High T-cell viability after transduction with the Lenti-X T-Cell Transduction Sponge. 4×10^6 human primary T cells were mixed with a lentivirus expressing ZsGreen1 at the indicated infection MOIs and added to the Lenti-X T-cell Transduction Sponge ("T-cell sponge"). Spinoculated samples were activated with CD3/CD28 ImmunoCult reagent for two days, then exposed to the lentivirus with polybrene (8 μ g/ml) and centrifuged at 1,500g for 90 min ("Spinoculation"). Viability was assessed at indicated timepoints post-transduction by 7-AAD staining and FACS analysis.

PRODUCT

Product	Cat. #	Package size
Lenti-X T-Cell Transduction Sponge	631480	12 Rxns



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