Miltenyi Biotec

T Cell TransAct™

Efficient T cell activation and expansion

Your new solution for T cell activation

What is T Cell TransAct™?

This ready-to-use reagent provides an innovative method for physiological activation and expansion of human T cells.

T Cell TransAct is a colloidal polymeric nanomatrix conjugated to humanized recombinant CD3 and CD28 agonists ensuring successful activation of resting T cells from hematological cell populations (e.g. PBMCs or enriched T cell populations) without the involvement of CD4 or CD8.

MACS® GMP T Cell TransAct is manufactured and controlled under ISO 13485 requirements. It is designed following the recommendations of USP <1043> on ancillary materials. In the US, a master file is held with the FDA for IND applications with Product Quality Certificate available via our website.

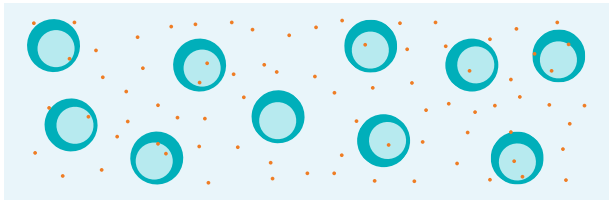


Figure 1: T Cell TransAct is in suspension when added to cell culture for polyclonal T cell stimulation.

T cell activation made simple and convenient

Practical application

- Volumetric dosage
- Ready-to-use
- Removal by simple washing

Robust stimulation

- Highest cell viability
- Physiological and stable stimulation

GMP

Convenient compatibility

- Available for research and GMP T cell workflows
- Optimized for CAR T cell production on the CliniMACS Prodigy®
- Can be sterile filtered


Bag 2
Starting Materials
CliniMACS Prodigy®

Efficient T cell activation and expansion

Effective stimulation

T Cell TransAct™ enables optimal T cell activation with a polymeric nanomatrix. The activation efficiency is comparable to larger activation beads. T cell activation made simple and convenient.

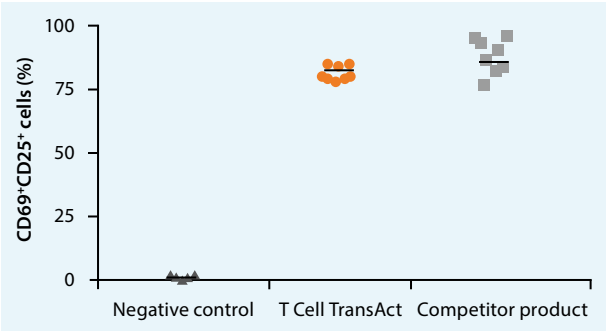


Figure 2: Comparison of activation efficiency at day two between T Cell TransAct and competitor product according to the activation markers CD69 and CD25. After two days, T Cell TransAct-activated cells are comparable to bead-activated cells.

Excellent proliferation

Proliferation of T cells is observed after stimulation with T Cell TransAct. Equal amounts of proliferation are observed when compared to bead-based stimulation methods.

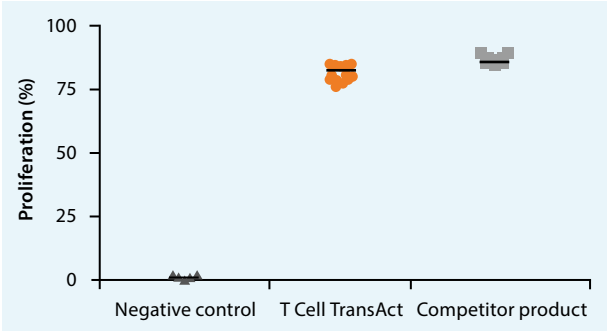


Figure 4: After seven days, proliferation of T Cell TransAct-activated cells is equal to bead-activated cells. T cells were cultivated in TexMACS™ Medium supplemented with IL-7 and IL-15.

High expansion

When striving for robust and reliable T cell proliferation, T Cell TransAct enables serum-free T Cell cultivation while maintaining consistently high cell expansion.

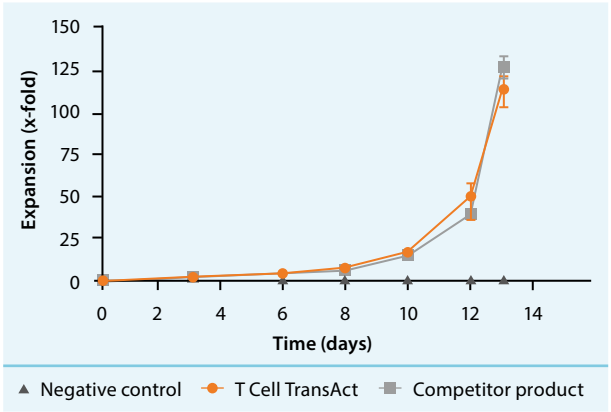


Figure 3: Comparable results of T cell expansion after stimulation with T Cell TransAct or competitor product in TexMACS Medium without human AB serum supplementation.

T cell phenotype

Generating CAR T cells requires a stable T cell phenotype. T cells activated with T cell TransAct and subsequently expanded with IL-7 and IL-15, display a phenotype of early differentiated T cells.

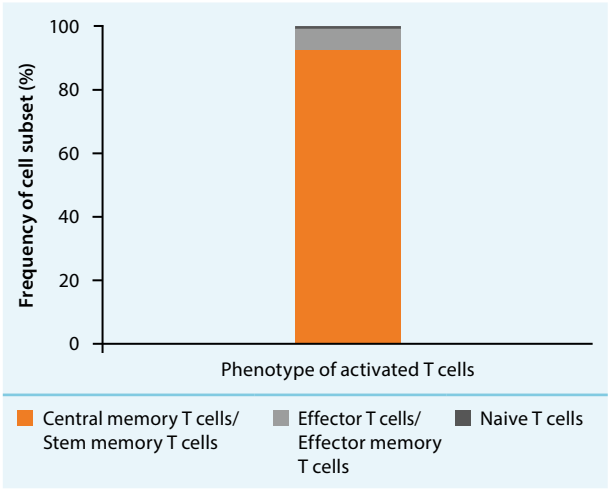


Figure 5: T cells were activated with T Cell TransAct and expanded for 14 days in TexMACS Medium supplemented with IL-7 and IL-15. More than 85% were stem memory T cells and central memory T cells.

Setting the stage for automated production of engineered T cells

Optimal design for CliniMACS Prodigy®

MACS® GMP T Cell TransAct™ is tailor made for the CliniMACS Prodigy.

- Maximum activation capacity for up to 1×10^8 cells
- 1 vial of MACS GMP T Cell TransAct per T cell transduction (TCT) production run

MACS GMP T Cell TransAct allows potent polyclonal T cell activation prior gene modification without the need for feeder cells.

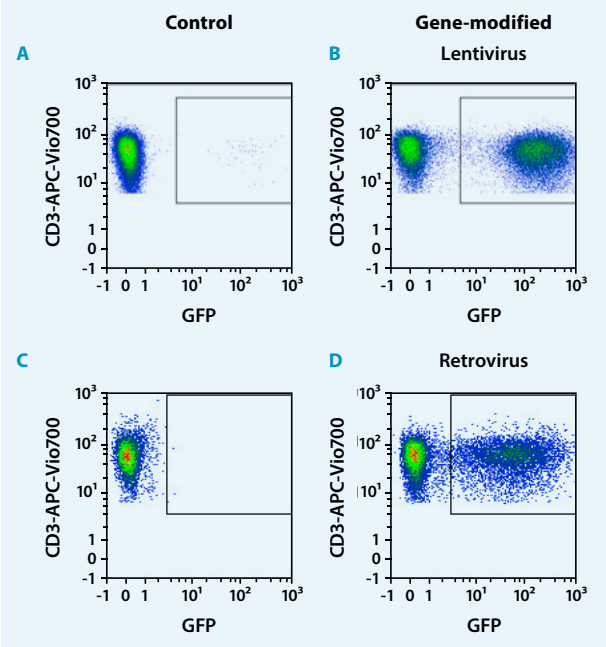


Figure 6: Isolated T cells were activated with MACS GMP T Cell TransAct and transduced with lentivirus (B) or retrovirus (D). Transduction of T cells with GFP vector resulted in strong GFP expression eleven days after gene modification (B, D). Untransduced T cells show no expression of GFP (A, C).

Cell expansion in serum-free media

Clinical-scale expansion of transduced T cells is effective under cultivation conditions with or without human AB serum (fig. 7A and B). The synergy between MACS GMP T Cell TransAct, TexMACS™ Medium and our MACS GMP Cytokines delivers an optimal final engineerd cell product independent of serum addition (fig. 7C).

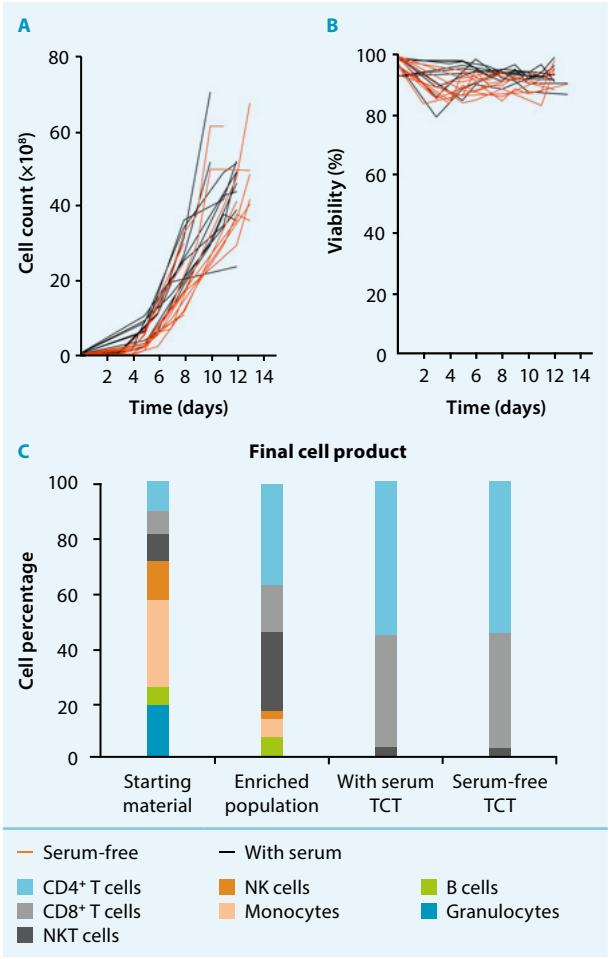


Figure 7: Enriched CD4⁺ and CD8⁺ T cells were stimulated with MACS GMP T Cell TransAct and expanded in a TCT process with 3% human AB serum or serum-free. Cell count (A) and viability (B) of cultured cells were measured at different time points. Cellular composition was determined in starting material, enriched population and in the final expanded product (C).

MACS® GMP T Cell TransAct™- Large Scale

Scale-up your T cell expansion

MACS GMP T Cell TransAct - Large Scale is optimized for the activation of high cell numbers. It is tailor-made for the application on the CliniMACS Prodigy® in combination with the tubing set including the large cultivation chamber.

- Efficient T cell activation and expansion for high cell numbers
- Optimized to activate and expand up to 4×10^8 enriched T cells
- One vial of MACS GMP T Cell TransAct - Large Scale is sufficient for one T cell transduction large-scale production run

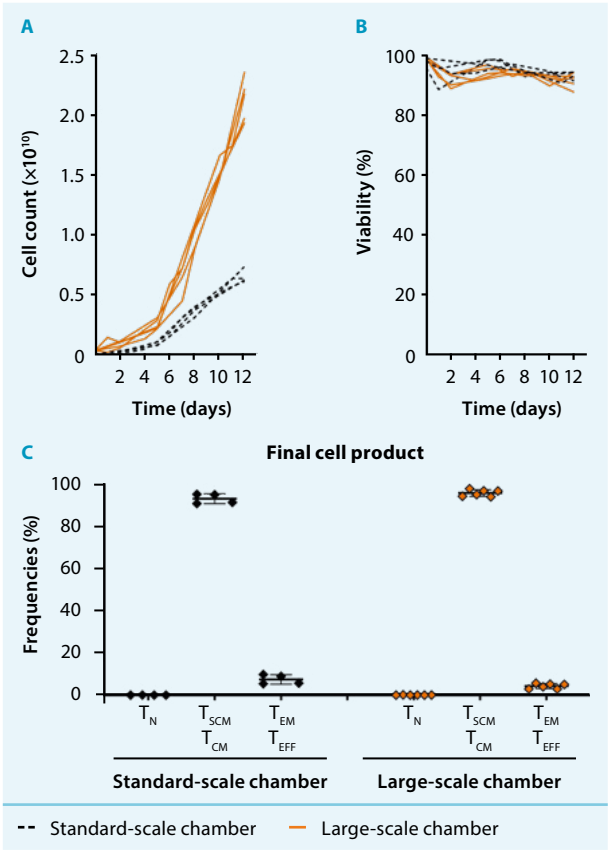


Figure 8: Enriched CD4⁺/CD8⁺ T cells were automatically expanded on the CliniMACS Prodigy after polyclonal stimulation with MACS GMP T Cell TransAct, standard or Large Scale. Either the standard-scale chamber (black, n=4) or the large-scale chamber (orange, n=6) was used for culture. Cell cultivation was monitored at different time points to determine cell number (A) and viability (B). On average, a total cell number of 2.1×10^{10} cells was reached using the large-scale chamber and MACS GMP T Cell TransAct - Large Scale in comparison to 6.5×10^9 cells expanded in the standard-scale chamber. The cellular composition of the enriched fraction was analyzed by flow cytometry on the MACSQuant® Analyzer 10. Frequencies of T cell phenotypes among viable CD45⁺ cells were determined for the final cell product (C).

Translational solutions for T cell activation

Research

Clinical

ACTIVATION

T Cell TransAct™

- Easy-to-use
- Robust T cell activation
- Colloidal polymeric nanomatrix

MACS® GMP T Cell TransAct

- GMP-grade
- Compatible with the CliniMACS Prodigy®
- Can be sterile filtered

STIMULATION

MACS Cytokines

- High grade quality
- Reliable, high biological activity
- Flexible: customized fillings

MACS GMP Cytokines

- Superior cytokine purity
- High specific activity
- Free of animal- and human-derived materials

EXPANSION

TexMACS™ Medium

- Serum-free T cell medium
- Specifically designed for T cell expansion
- Excellent quality

MACS GMP TexMACS

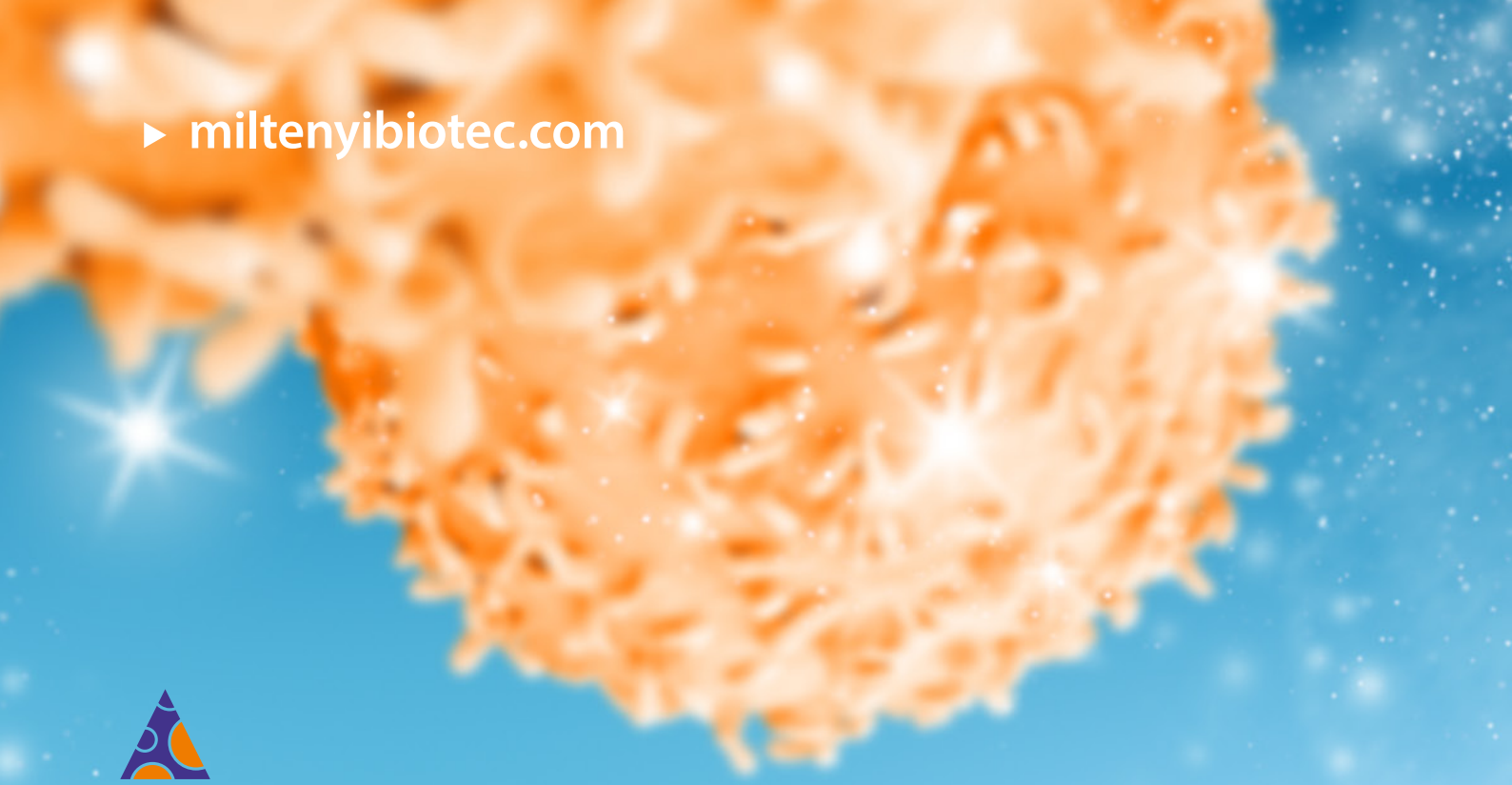
- Ideal for GMP-compliant T cell expansion
- Serum- and xeno-component free
- Available with or without phenol red

VIDEO

See the CliniMACS Prodigy Process in action!

Generate gene-modified T cells in a simple and automated fashion. Easy to use, this unique process will surely change the way you work.

▸ **miltenyibiotec.com/tct**



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130-118-046.04