# A closed, modular approach to autologous CAR T cell therapy manufacturing

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The complex, multi-step process of generating functional CAR T cells includes cell isolation, activation, modification, expansion and finally cryopreservation. Introducing closed processes to replace manual manipulations can reduce contamination, errors, and variability. Closed, modular, automatable instrumentation for specific unit operations within the workflow can improve upon consistency, purity and safety of the final CAR T product. Additionally, scalable and compliant platforms support the transition from early discovery to commercial scale manufacturing.

This demonstration provides in-depth understanding of Thermo Fisher Scientific's digitally compatible, GMP-compliant manufacturing platform to produce CAR T cells.

Day 1



## **CELL PROCESSING**

Day 0

CTS™ Rotea™ Counterflow **Centrifugation System** 

Counterflow centrifugation suspends cells in a fluidized bed by exerting a constant flow force against centrifugal forces ensuring cells are gently concentrated without ever forming a pellet in the cone and washed efficiently at unmatched recovery rates (>95% cell recovery). The CTS Rotea instrument is compact, versatile and can be easily integrated into multiple points within your workflow.

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### **CELL ISOLATION**

CTS™ DynaMag™ Magnet

Ideal for magnetic isolation in closed, sterile blood bags Scalable volumes: 50-330 mL in static separations and >10 L in continuous flow separations following T-cell expansion protocols.

Residual beads that escape initial magnetic capture are retained on a secondary magnet.



#### **CELL MODIFICATION**

HyPerforma™ G3Lab Controller & HyPerforma™ Rocker Bioreactor

Specifically designed for PD scale bioprocessing applications to full cGMP manufacturing workflows, featuring flexible upstream TruBio software powered by the Emerson™ DeltaV™ system.

Configurable rocking motion – from a smooth waveform that minimizes shear forces for sensitive cell lines. through four intermediate steps, to an aggressive motion that maximizes oxygen transfer for robust cells with high oxygen demands.



#### Day 3-9

**CRYOPRESERVATION** 

Designed with reliability, protection, and data traceability in mind for your sample preparation and GMP production needs.

Intuative touchscreen display allows for easy set-up, operation and review of a freezing run. Features six pre-set freezing profiles and space for up to 14 user-defined 'custom' freeze profiles.





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