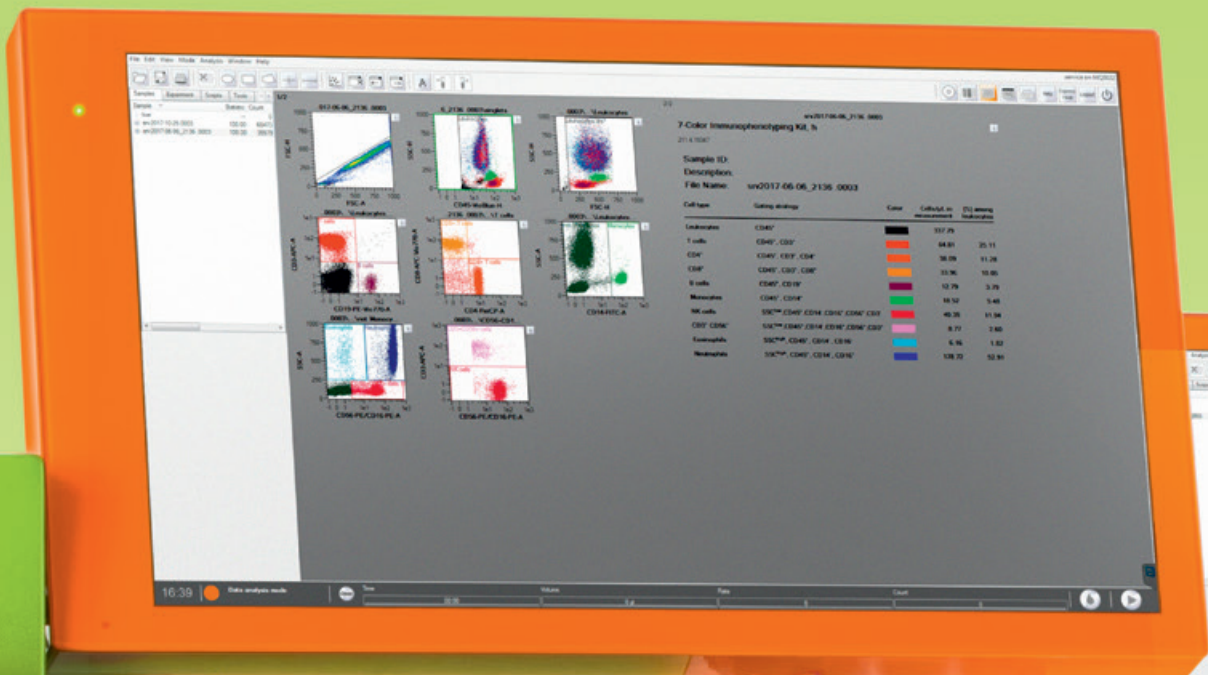


# Express Modes

Reliable data at the push of a button



# Automated analysis, reproducible results

Express Modes are unique add-on features for the MACSQuantify™ Software. They are standardized data analysis tools that are optimized to automate flow cytometric measurements and analyses via predefined experiment settings, acquisition, and automated gating. Derived from mathematical algorithms, they reduce human error and therefore increase experimental reproducibility.

Express Modes contain application-dependent templates that are based on a significant amount of real data, including up to 1,100 datasets for a given application. They contain verified gating ranges that are derived from distinct algorithms for the application-specific distributions. Automated adjustments for each individual data file allow for optimal analysis without the variability introduced by manual intervention. This data analysis provides consistent results and robust analyses that are easily integrated into standardized operating procedures (SOPs).

## Custom Express Modes

If your research application is not included in our Express Modes packages, we also offer a Custom Express Mode service.

Custom Express Modes are developed specifically for your workflow and are optimized to fulfill your individual needs. They can cover automated acquisition and analysis with custom statistics tables and export of reports in various file formats.

For more information please contact:

**[Application\\_Development@miltenyibiotec.de](mailto:Application_Development@miltenyibiotec.de)**



# CAR T cells

T cells control a variety of immune responses and therefore play a central role in the adaptive immune system. Recently, T cells have been redirected against cancer by genetic transduction with a receptor recognizing a specific tumor antigen. CD19 chimeric antigen receptor (CAR) T cells have shown tremendous clinical efficacy in the treatment of patients with hematological malignancies. As part of the CAR T cell production process, multicolor flow cytometry is a suitable and easy method to identify and monitor CAR T cells.

For standardization and automation of CAR T cell analysis, Miltenyi Biotec developed an Express Mode package that contains 12 optimized, application-specific Express Modes (table 1). It includes the CAR T Cell Transduction Express Mode (fig. 1), which can be used for the determination of transduction efficiency.

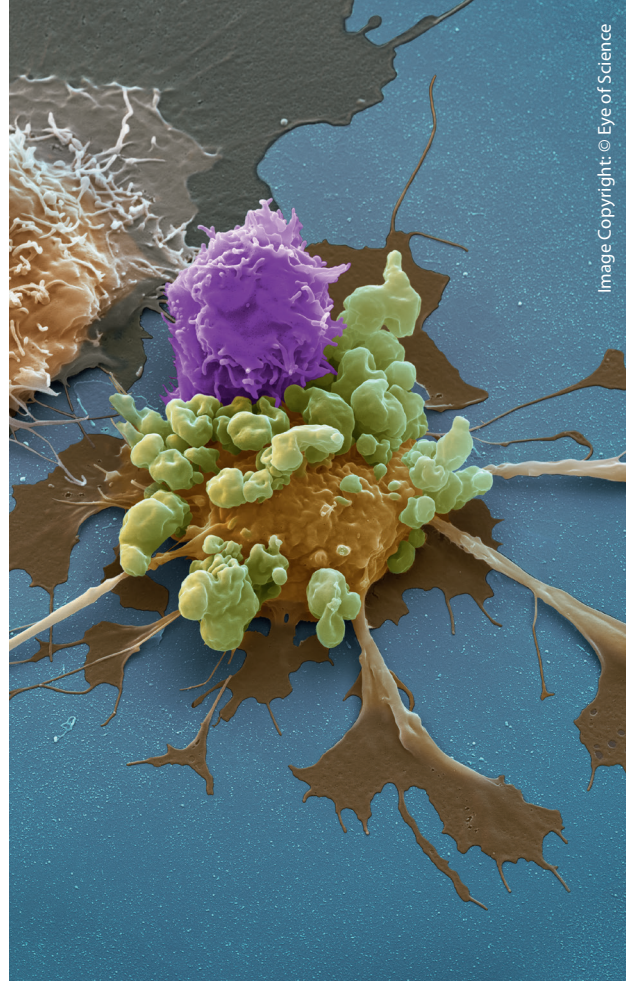


Image Copyright: © Eye of Science

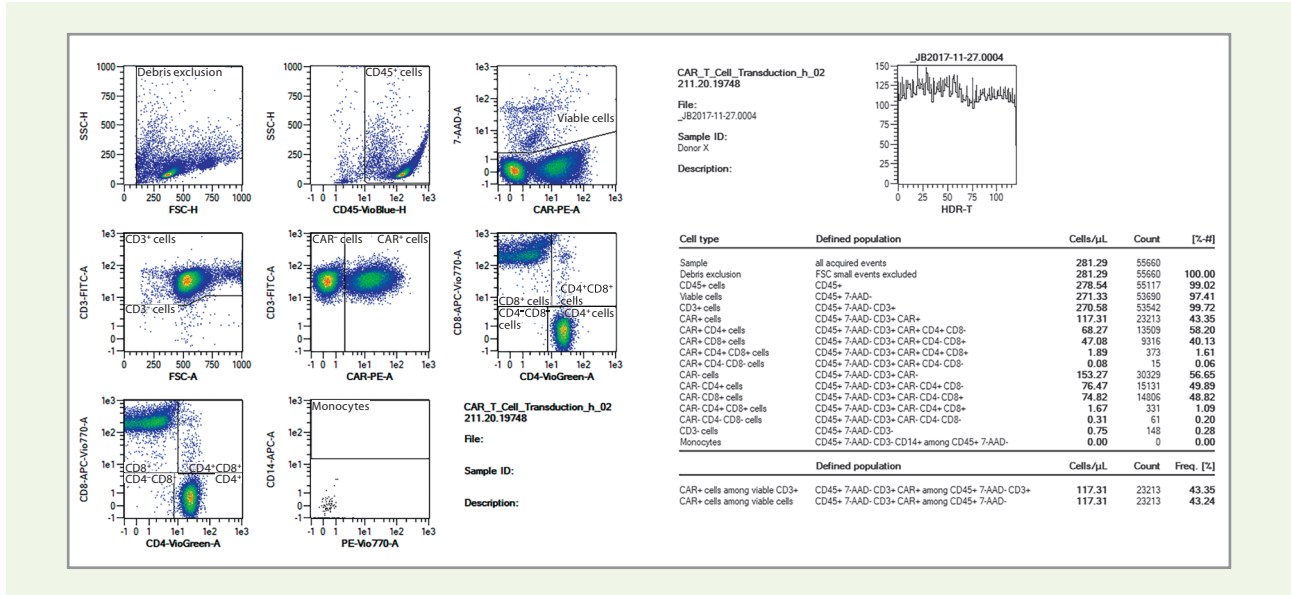


Figure 1: CAR T Cell Transduction Express Mode. Standardized determination of transduction efficiency of CAR T cells.

# CAR T Cell Express Mode Package

Express Mode	Purpose	V1 VioBlue®	V2 VioGreen™	B1 FITC	B2 PE	B3 7AAD PerCP- Vio® 700	B4 PE-Vio 770	R1 APC	R2 APC-Vio 770
Immune Cell Composition	Determination of cell viability and composition of immune cells	CD45	CD4	CD3	CD56/CD16	7-AAD	CD19	CD14	CD8
CAR T Cell Transduction	Determination of transduction efficiency of CAR T cells	CD45	CD4	CD3	CAR detection reagent	7-AAD	–	CD14	CD8
CAR T Cell Persistence	Determination of CAR T cell persistence	CD45RA	CD4	CD3	CAR detection reagent	7-AAD*	CD62L	CD45RO	CD8
CAR T Cell Tscm	Determination of stem memory T cells (Tscm)	CD197	CD4	CD3	CD95	7-AAD	CD62L	CD45RO	CD8
CAR T Cell Differentiation	Analysis of differentiation markers on CAR <sup>+</sup> and CAR <sup>-</sup> T cells	CD45RA	CD4	CD3	CAR detection reagent	7-AAD	CD62L	CD45RO	CD8
CAR T Cell Proliferative Ability	Analysis of proliferative ability markers on CAR <sup>+</sup> and CAR <sup>-</sup> T cells	CD27	CD4	CD3	CAR detection reagent	7-AAD*	CD279	CD127	CD8
CAR T Cell Exhaustion	Analysis of exhaustion markers on CAR <sup>+</sup> and CAR <sup>-</sup> T cells	CD223	CD4	CD3	CAR detection reagent	7-AAD*	CD279	CD366	CD8
CAR T Cell Activation	Analysis of activation markers on CAR <sup>+</sup> and CAR <sup>-</sup> T cells	CD154	CD4	CD3	CAR detection reagent	7-AAD*	CD25	CD137	CD8
CAR T Cell Staining Control	Staining control	–	CD4	CD3	CAR detection reagent	7-AAD*	–	–	CD8
B Cell Differentiation	Determination of B cell differentiation status	CD20	CD19	CD38	CD138	7-AAD	IgD	CD27	CD24
B Malignant Cells	Identification of malignant B cells	CD45	Ig Kappa	CD19	CD34	7-AAD	CD20	CD5/ CD10	Ig Lambda
B Regulatory Cells	Identification of various regulatory B cell subsets	CD20	CD19	CD39	CD21	7-AAD	CD25	CD73	CD71

**Table 1: Express Modes belonging to the CAR T Cell Express Mode Package.**

\* For immunomonitoring exclusion markers such as CD14 and CD15 should be added in PerCP-Vio 700.



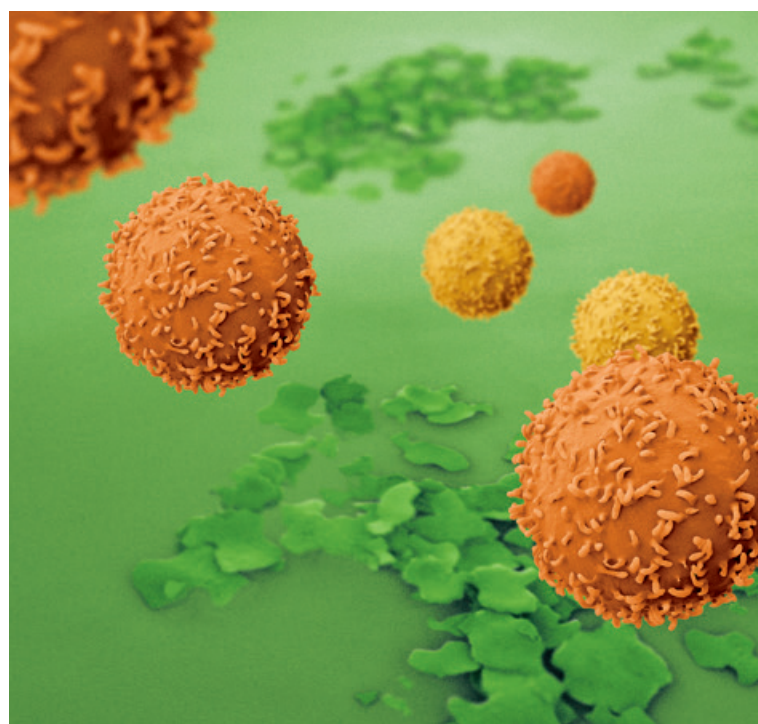
# T cell depletion in graft engineering

The CliniMACS® TCRα/β System is used for active depletion of CD45RA<sup>+</sup> TCRα/β<sup>+</sup> T cells during graft engineering. For the analysis of CD45RA<sup>+</sup> TCRα/β<sup>+</sup> cells before and after automated cell separation on the CliniMACS Prodigy® Platform, we have developed two Express Modes. The TCRα/β CD45RA Depletion Express Mode is used for determining the frequency of CD45RA<sup>+</sup>, TCRα/β<sup>+</sup>, as well as CD34<sup>+</sup> cells in the

sample. The Immune Cell Composition Express Mode is used for determining cell concentration, viability of leukocytes, and composition of the final cellular product. Together, both panels are used to determine the total amount of CD34<sup>+</sup> cells, as well as the remaining amount of CD45RA<sup>+</sup> and TCRα/β<sup>+</sup> cells in the cellular product.

Express Mode	Purpose	V1 VioBlue	V2 VioGreen	B1 FITC	B2 PE	B3 7AAD PerCP- Vio 700	B4 PE-Vio 770	R1 APC	R2 APC-Vio 770
TCRα/β CD45RA Depletion	Determination of frequency of CD45RA <sup>+</sup> , TCRα/β <sup>+</sup> , and CD34 <sup>+</sup> cells	CD34	CD45	CD45RA	CD3	7-AAD, CD14, and CD15	TCRγ/δ	TCRα/β	CD45RO
Immune Cell Composition	Determination of cell concentration, leukocyte viability, and immune cell composition of cellular product	CD45	CD4	CD3	CD16/CD56	7-AAD	CD20	CD14	CD8

**Table 3: Express Mode Package for analysis of CD45RA<sup>+</sup>TCRα/β<sup>+</sup> T cell depletion during graft engineering.**



# The complete package for reproducible flow cytometry

In order to achieve consistent results, Miltenyi Biotec offers a complete flow cytometry solution including a variety of MACSQuant Analyzer flow cytometers and a broad range of reagents. We help you to make sure that variations in your experiment are due to your sample and not due to unreliable antibodies or instruments.

## MACSQuant Analyzers – At the heart of intelligent design

Our MACSQuant® Analyzers are engineered to enable demanding and diverse flow cytometry applications of researchers around the world. At Miltenyi Biotec, we continuously expand our instrument portfolio to meet the ever-growing complexities in cell analysis. Innovation is at the core of each MACSQuant Instrument, offering automated flow cytometry solutions for a diverse array of applications. Whether mining for rare cells, analyzing the efficiency of your cell manufacturing process or investigating signaling pathways, you are equipped for the task at hand.

### Automated features of the MACSQuant Family

Startup, cleaning,  
and shutdown

Compensation

Labeling

Calibration and  
quality control (QC)



## REAfinity™ Recombinant Antibodies – Flow cytometry is in their genes

Miltenyi Biotec has introduced a portfolio of REAfinity™ Recombinant Antibodies that provide reliable lot-to-lot consistency and purity compared to mouse or rat monoclonal and polyclonal antibodies. Our recombinant technology also diminishes the need for FcR blocking and allows for analyses with only one single isotype control, generating high quality data with no more background signal while saving efforts when setting up experiments. For more information, visit: [www.miltenyibiotec.com/reafinity](http://www.miltenyibiotec.com/reafinity)

### Advantages of REAfinity Recombinant Antibodies:

- High lot-to-lot consistency
- One universal isotype
- No more background signal



## Support at your fingertips

Our technical support team offers around-the-clock troubleshooting (24 hours on weekdays) with realtime access to your instrument using the remote support function.

# ► miltenyibiotec.com/expressmodes



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