BD Naïve/Memory T-Cell Kits and Templates
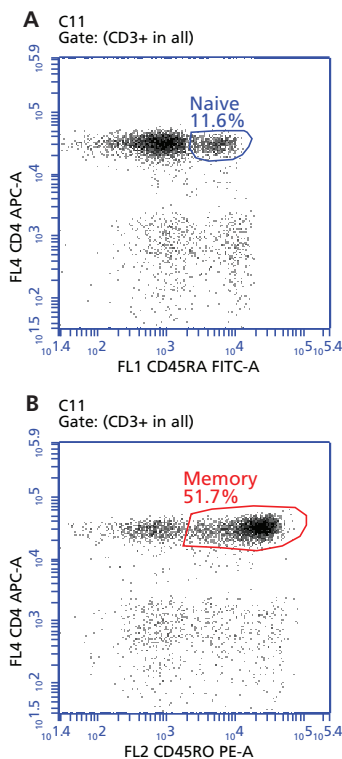## Characterization of T Cells on the BD Accuri™ C6 Flow Cytometer

Features

- Preconfigured kits, protocols, and software templates to distinguish naïve vs memory T-cell subsets on the BD Accuri C6

- Support studies involving human CD45RA and CD4, in combination with CD45RO, CD62L, CD197, and/or CD3

- Enable quick and easy setup and analysis using the BD Accuri C6

Figure 1. BD Multitest Human CD45RA/CD45RO/CD3/CD4 Kit (Cat. No. 340571) analysis on the BD Accuri C6.

Human peripheral blood was stained according to the kit procedure, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software with a gate set on CD3+ lymphocytes. **Results:** The CD3+ T cells were characterized as either **(A)** naïve (CD4+CD45RA+, blue) or **(B)** memory cells (CD4+CD45RO+, red).

BD naïve/memory T-cell kits, protocols, and software templates for the BD Accuri™ C6 flow cytometer simplify the identification of human naïve and memory T cells and their subsets. BD offers three naïve/memory T-cell kits (for studies involving human CD45RA and CD4, in combination with CD45RO, CD62L, CD197, and/or CD3) that include fluorescent antibodies needed for acquisition and analysis. BD Accuri™ C6 software templates matched to each kit include predefined workspaces, markers, regions, gates, and parameter names for quick and easy setup and analysis.

The three kits are listed below. Figures 1–3 show data on the BD Accuri C6 using the preconfigured kits and software templates.

The **BD Multitest™ Human CD45RA/CD45RO/CD3/CD4 Kit** (Cat. No. 340571) is a convenient antibody cocktail to differentiate between naïve and memory T cells using the classic markers CD45RO and CD45RA. The lyse/no-wash protocol is fast and easy to use.

The **BD Multitest™ Human CD45RA/CD62L/CD3/CD4 Kit** (Cat. No. 340977) also distinguishes naïve from memory CD4 T cells in a convenient antibody cocktail, and adds a CD62L (L-selectin) antibody to assess activation of memory cells.

The **BD Pharmingen™ Human Naïve/Memory T Cell Panel** (Cat. No. 561438) also distinguishes naïve from memory CD4 T cells in a convenient antibody cocktail, and adds a CD197 (CCR7) antibody to identify central and effector memory cells. It may be combined with CD27, CD28, and other markers to assess antigen experience, depending on the level of activation.

The immune system's ability to respond with greater intensity upon re-exposure to antigens forms the basis of immunological memory. The understanding of immunological memory is important for the study of vaccine development, infectious disease, and immune reconstitution.

Relative populations of different T-cell subsets, activation markers, and growth factors can provide a useful measurement of immune response to antigens. Memory T cells, derived from naïve T cells upon activation, are characterized phenotypically in humans by high levels of CD45RO expression. Central memory cells retain the lymph node (LN)-homing receptors CD197 (CCR7) and CD62L (L-selectin) as they develop from the naïve T cells. Effector memory cells, on the other hand, downregulate CD62L and express a diverse set of homing receptors, which enables the cells to pass through non-lymphoid tissues.[1]

Easy to use, simple to maintain, and affordable, the BD Accuri C6 personal flow cytometer is equipped with a blue laser, a red laser, two light scatter detectors, and four fluorescence detectors. Compact design, fixed alignment, and pre-optimized detector settings result in a system that is simple to use, and a nonpressurized fluidics system enables kinetic measurements in real time. For walkaway convenience, the optional BD CSampler™ accessory offers automated sampling from 24-tube racks or multiwell plates.

Visit **bdbiosciences.com** for more information.
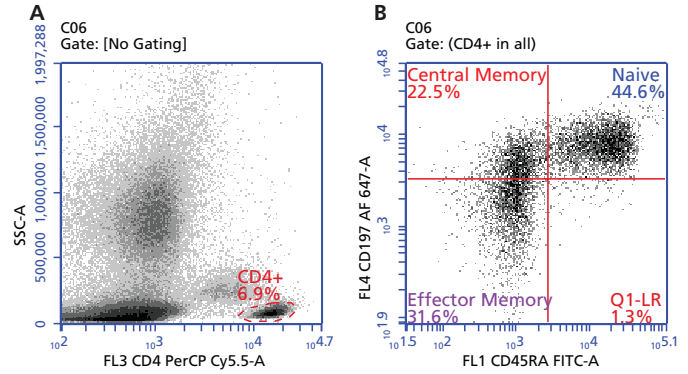
BD Naïve/Memory T-Cell Kits and Template
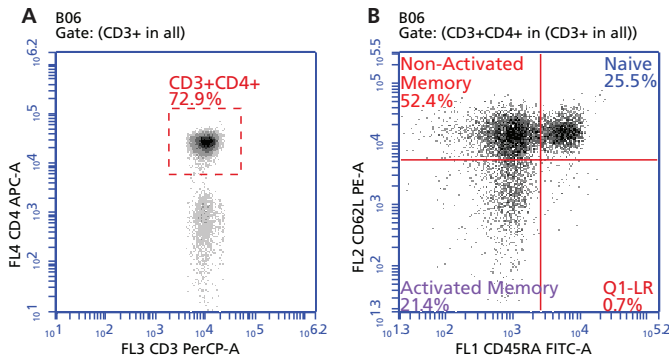
Figure 2. BD Multitest Human CD45RA/CD62L/CD3/CD4 Kit (Cat. No. 340977) analysis on the BD Accuri C6.

Human peripheral blood was stained according to the kit procedure, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software with a gate set on CD3+ lymphocytes. **Results: A.** An additional gate was drawn around the CD3+CD4+ T-cell population. **B.** The CD3+CD4+ T cells were characterized as either naïve (CD45RA+CD62L+, blue), non-activated memory (CD45RA−CD62L+, red), or activated memory cells (CD45RA−CD62L−, purple).

Figure 3. BD Pharmingen Human Naïve/Memory T Cell Panel (Cat. No. 561438) analysis on the BD Accuri C6.

Human peripheral blood was stained according to the kit procedure, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software. (The optional drop-in reagent CD3 APC-H7 was not used.) **Results: A.** A gate was drawn around the CD4+ T-cell population. **B.** The CD4+ T cells were characterized as either naïve (CD45RA+CD197+, blue), central memory (CD45RA−CD197+, red), or effector memory cells (CD45RA−CD197−, purple).

Ordering Information

All kits and their associated software templates are available at bdbiosciences.com/go/templates.

Description	Clone	Quantity	Number of Tests	Cat. No.
BD Multitest Human CD45RA/CD45RO/CD3/CD4 Kit containing:				
Human CD3 PerCP	SK7			
Human CD4 APC	SK3	20 µL/test	50 tests	**340571**
Human CD45RA FITC	L48			
Human CD45RO PE	UCHL-1			
BD Multitest Human CD45RA/CD62L/CD3/CD4 containing:				
Human CD3 PerCP	SK7			
Human CD4 APC	SK3	20 µL/test	50 tests	**340977**
Human CD45RA FITC	L48			
Human CD62L PE	SK11			
BD Pharmingen Human Naïve/Memory T Cell Panel containing:				
Human CD3 APC-H7 (optional drop-in; not used on BD Accuri C6)	SK7	5 µL/test		
Human CD4 PerCP-Cy™5.5	SK3	5 µL/test	50 tests	**561438**
Human CD45RA FITC	HI100	5 µL/test		
Human CD197 (CCR7) Alexa Fluor® 647	150503	5 µL/test		

Related Kits

Description	Cat. No.
BD Pharmingen™ T/B/NK Cell Cocktail	558639

References

1. Appay V, van Lier RA, Sallusto F, Roederer M. Phenotype and function of human T lymphocyte subsets: consensus and issues. *Cytometry A.* 2008;73:975-983.

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