

BD Cell Cycle/DNA Kits and Templates

Cell Cycle and DNA Content Assays on the BD Accuri™ C6 Flow Cytometer

Features

Preconfigured kits, protocols, and software templates to identify cell cycle status and assess ploidy on the BD Accuri C6

Support studies involving PI, 7-AAD, and BrdU

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



BD cell cycle/DNA kits, protocols, and software templates for the BD Accuri™ C6 flow cytometer simplify the assessment of cell cycle and DNA status. BD offers three cell cycle/DNA kits for studies involving propidium iodide (PI), 7-amino actinomycin D (7-AAD), and bromodeoxyuridine (BrdU), along with buffers and 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 and 2 show data on the BD Accuri C6 using the preconfigured kits and software templates.

The **BD Cycletest™ Plus DNA Reagent Kit** (Cat. No. 340242) uses PI and other active agents to obtain precise ploidy and cell cycle measurements using isolated cell nuclei. Researchers can use it to estimate the DNA index (DI) and cell cycle distribution of DNA stemlines and identify those with abnormal ploidy.

The **BD Pharmingen™ FITC and APC BrdU Flow Kits** (Cat. Nos. 559619 and 552598) use 7-AAD and BrdU to provide high-resolution cell cycle measurements. Researchers can use them to identify and analyze actively cycling cell subpopulations, and to examine cell cycle kinetics.

Flow cytometry has become an essential methodology for assessing cell cycle, cell proliferation, and DNA content. Multicolor flow cytometric assays allow researchers to investigate these facets of cell status—along with other cellular events, such as apoptosis, DNA damage, protein phosphorylation, or cytokine secretion—within heterogeneous cell populations.

BD Biosciences offers a wide variety of reagents to study the cell cycle. DNA dyes include PI and 7-AAD, which can trace changing DNA levels and generate characteristic cellular DNA content profiles. BrdU can assess cell proliferation and apoptosis as well as cell cycle distribution.

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.

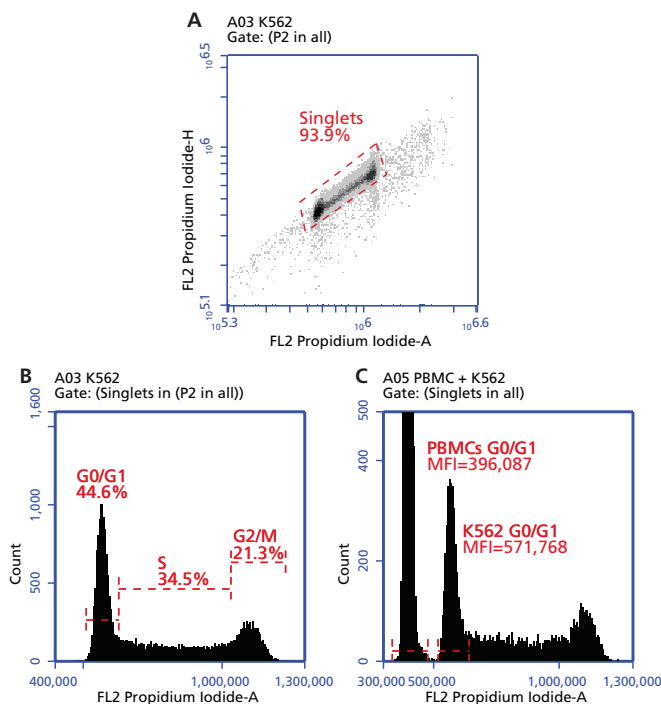


Figure 1. BD Cycletest Plus DNA Reagent Kit (Cat. No. 340242) analysis on the BD Accuri C6.

K562 leukemia cells (incorporating the Philadelphia translocation) were cultured and stained according to the kit protocol, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software. A. K562 cells were gated to exclude aggregates on a PI FL2-A vs PI FL2-H plot. B. A PI histogram of the gated K562 singlets distinguishes cells at the G₀/G₁, S, and G₂+M cycle phases. Gating of cell cycle phases is approximate and can be refined using software analysis. C. Staining and analyzing normal PBMCs along with the K562 cells can quantify their aneuploidy by gating on their G₀/G₁ peaks. The ratio of the MFIs of the two peaks, called the DNA Index (DI), serves as a measure of aneuploidy—in this case 1.4.

Visit bdbiosciences.com for more information.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.



BD Cell Cycle/DNA Kits and Templates

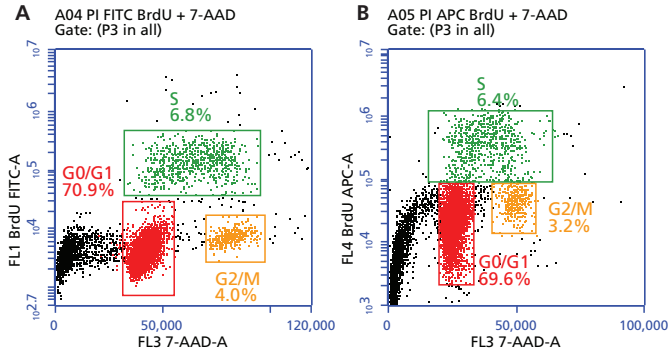


Figure 2. BD Pharmingen FITC and APC BrdU Flow Kits (Cat. Nos. 559619 and 552598) analysis on the BD Accuri C6.

Human peripheral blood mononuclear cells (PBMCs) were stimulated, expanded, restimulated, and labeled with 20 μ M of BrdU during the final hour. After harvesting and staining the cells with 7-AAD and either FITC or APC anti-BrdU according to the kit protocol, samples were acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software. Cell cycle phases are clearly distinguished in plots showing (A) 7-AAD vs BrdU FITC and (B) 7-AAD vs BrdU APC. Cells in black (to left of G_0/G_1 gate) contain less DNA, which may indicate cell death.

Ordering Information

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

Description	Quantity	Number of Tests	Cat. No.
BD Cycletest Plus DNA Reagent Kit containing:			
Solution A: Trypsin in spermine tetrahydrochloride detergent buffer	10 mL	40 tests	340242
Solution B: RNase A and trypsin inhibitor in spermine buffer	8 mL		
Solution C: Propidium iodide (PI) in spermine buffer	8 mL		
Buffer Solution: Dimethyl sulfoxide (DMSO) in sucrose-sodium citrate	3 x 50 mL		

BD Pharmingen FITC or APC BrdU Flow Kit containing:			
FITC or APC BrdU (10 mg/mL)	5 x 0.5 mL	50 tests	559619 (FITC) 552598 (APC)
DNase	5 x 300 μ L		
Fluorochrome-conjugated anti-BrdU antibody	1 x 65 μ L		
BD Cytofix/Cytoperm™ buffer	1 x 25 mL		
BD Perm/Wash™ buffer (10X)	2 x 25 mL		
BD Cytofix/Cytoperm™ Plus permeabilization buffer	1 x 10 mL		
7-AAD	1 x 1 mL		

Related Kits

Description	Cat. No.
BD Pharmingen™ Apoptosis, DNA Damage and Cell Proliferation Kit	562253
BD Pharmingen™ Annexin V Apoptosis Detection Kit	556570 (FITC) 559763 (PE)
BD™ MitoScreen (JC-1) Kit	551302
BD Pharmingen™ Caspase-3 Apoptosis Kit	550480 (FITC) 550914 (PE)
BD™ Cell Viability Kit	349483

Class 1 Laser Product.

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