

# BD Apoptosis Kits and Templates

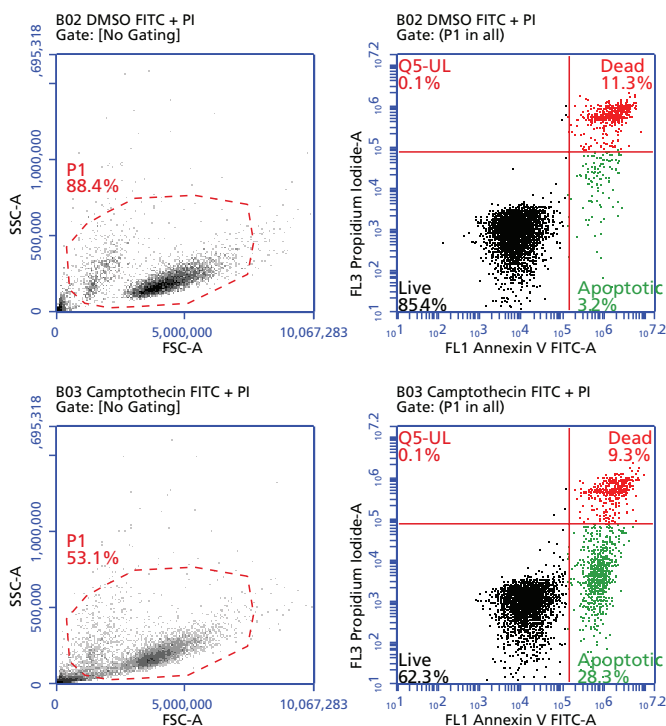
## Detection of Apoptotic Cells on the BD Accuri™ C6 Flow Cytometer

### Features

Preconfigured kits, protocols, and software templates to detect apoptosis on the BD Accuri C6

Support studies involving Annexin V, JC-1, and active caspase-3

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



**Figure 1.** BD Pharmingen Annexin V FITC Apoptosis Detection Kit (Cat. No. 556570) analysis on the BD Accuri C6.

Jurkat cells (human T-cell leukemia; ATCC TIB-152) were treated with 6  $\mu$ M of camptothecin or 0.1% DMSO (negative control) for 4 hours to induce apoptosis. Cells were stained with FITC Annexin V and PI according to the kit staining protocol, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software. **Results:** Camptothecin treatment (lower plots) resulted in an increase in early apoptotic cells (PI<sup>-</sup>Annexin V<sup>+</sup>, shown in green) compared to the DMSO control (upper plots). Dead or late-stage apoptotic cells (PI<sup>+</sup>Annexin V<sup>+</sup>, red) and live cells (PI<sup>-</sup>Annexin V<sup>-</sup>, black) were easily distinguished.

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BD apoptosis kits, protocols, and software templates for the BD Accuri™ C6 flow cytometer simplify the detection of apoptosis at different stages. BD offers four apoptosis kits (for studies involving Annexin V, JC-1, and active caspase-3) 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 four kits are listed below. Figures 1–3 show data on the BD Accuri C6 using the preconfigured kits and software templates.

The **BD Pharmingen™ FITC and PE Annexin V Apoptosis Detection Kits** (Cat. Nos. 556570 and 559763) detect externalization of phosphatidylserine (PS) molecules on the plasma membrane, one of the first signs of the apoptotic process.

The **BD™ MitoScreen (JC-1) Kit** (Cat. No. 551302) detects apoptosis from changes in mitochondrial membrane potential ( $\Delta\Psi_m$ ) due to the accumulation of JC-1 aggregates.

The **BD Pharmingen™ Caspase-3 PE Assay Kit** (Cat. No. 550914) detects apoptosis from the presence of cleaved (activated) caspase-3, a key apoptotic protease that cleaves and activates other caspases as well as other cellular targets.

Apoptosis (programmed cell death) is an important biological process for both development and normal tissue homeostasis. Dysregulation of apoptotic pathways can lead to disease.

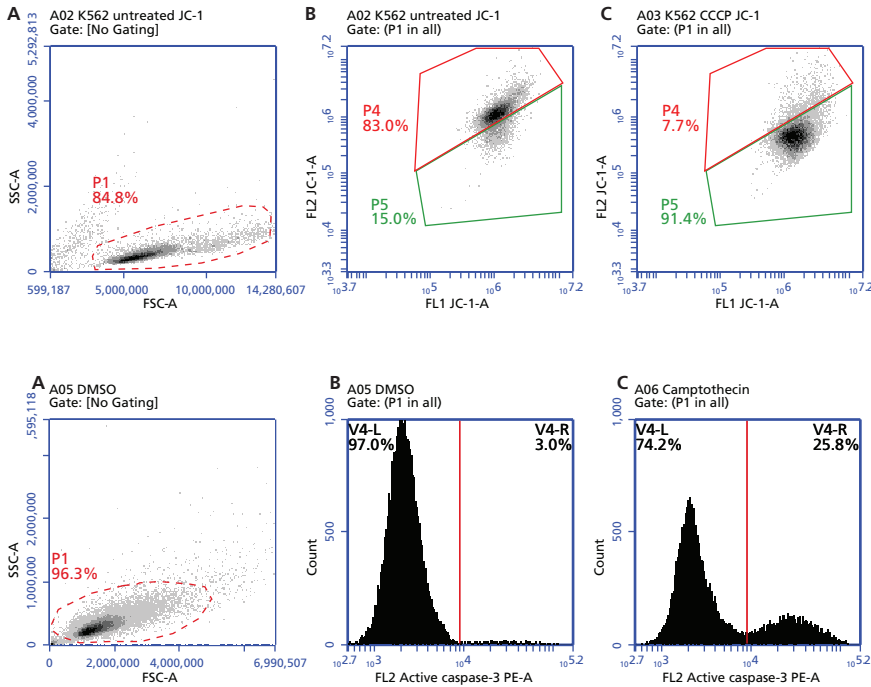
Flow cytometry is an especially powerful method for detecting apoptosis because researchers can gain quantitative data on both apoptotic and dead cells within whole populations and cell subsets. BD offers multiple methods for detecting cells at various stages of apoptosis, as well as a broad portfolio of reagents to identify cell subsets.

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. It can perform most flow cytometric apoptosis assays, including Annexin V, caspase activation, PARP cleavage, mitochondrial change, and DNA fragmentation. 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.

For a broader review of apoptosis detection on the BD Accuri C6, see the BD Biosciences technical bulletin, “Multiple Methods for Detecting Apoptosis on the BD Accuri™ C6 Flow Cytometer” (March 2012), available in the Resources section at [bdbiosciences.com](http://bdbiosciences.com).



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**Figure 2.** BD MitoScreen (JC-1) Kit (Cat. No. 551302) analysis on the BD Accuri C6.

K562 cells (human chronic myelogenous leukemia; ATCC CCL-243) were treated with 100  $\mu$ M of CCCP (in DMSO) for 5 minutes at 37°C to induce mitochondrial membranes to decouple. The cells were stained with JC-1 and washed according to the kit protocol, acquired on a BD Accuri C6 flow cytometer using the kit template, and analyzed using BD Accuri C6 software. **Results:** Compared to untreated controls (B), CCCP treatment (C) resulted in a shift in mitochondrial membrane potential (red to green). Because JC-1 staining patterns can vary for different cell types and experimental conditions, P4 and P5 gate boundaries should be adjusted according to the kit guidelines.

**Figure 3.** BD Pharmingen Caspase-3 Assay Kit (Cat. No. 550914) analysis on the BD Accuri C6.

Jurkat cells (human T-cell leukemia; ATCC TIB-152) were treated with 6  $\mu$ M of camptothecin or 0.1% DMSO (negative control) for 4 hours to induce apoptosis. Cells were permeabilized, fixed, 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. **Results:** Camptothecin treatment (C) resulted in an increase in active caspase-3 expression compared to the DMSO control (B), which was almost completely negative.

## Ordering Information

All kits and their associated software templates are available at [bdbiosciences.com/go/templates](http://bdbiosciences.com/go/templates).

Description	Quantity	Number of Tests	Cat. No.
<b>BD Pharmingen Annexin V FITC Apoptosis Detection Kit II containing:</b>			
Purified Recombinant Annexin V	100 $\mu$ g	100 tests	556570
FITC Annexin V	0.5 mL		
Propidium Iodide Staining Solution	2.0 mL		
10X Annexin V Binding Buffer	50 mL		

<b>BD Pharmingen Annexin V PE Apoptosis Detection Kit I containing:</b>			
PE Annexin V	0.5 mL	100 tests	559763
7-AAD	2.0 mL		
10X Annexin V Binding Buffer	50 mL		

<b>BD MitoScreen (JC-1) Kit containing:</b>			
JC-1	50 mL	100 tests	551302
10X Assay Buffer	60 mL		

<b>BD Pharmingen Caspase-3 PE Apoptosis Kit containing:</b>			
PE Rabbit Anti-Active Caspase-3	20 $\mu$ L/test	100 tests	550914
BD Cytofix/Cytoperm™ Fixation and Permeabilization Solution	65 mL		
BD Perm/Wash™ Buffer (10X Solution)	65 mL		

## Related Kits

Description	Cat. No.
BD Pharmingen™ Active Caspase-3 FITC Apoptosis Kit	550480
BD Pharmingen™ Apoptosis, DNA Damage and Cell Proliferation Kit	562253
BD Pharmingen™ BrdU Flow Kit	559619 (FITC) 552598 (APC)
BD Cycletest™ Plus DNA Reagent Kit	340242
BD™ Cell Viability Kit	349483

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