Technical Data Sheet

DRAQ™

Product Information

Material Number: 564904
Size: 1 mL
Concentration: 0.3 mM
Tested in Development: Human, Mouse
Reported Reactivity: Rat

Storage Buffer: Aqueous buffered solution containing proprietary ingredients.

Component: 51-9011172
Description: NA Anti-
Size: 1 mL (1 ea)

Description

DRAQ™ (Deep Red Anthraquinone 7) is a far-red fluorescent DNA dye. DRAQ™ is cell impermeable and may be used to stain nucleic acids in fixed cells for cell cycle analysis by DNA content, nuclear visualization, or discrimination of nucleated cells from debris or enucleated cells. Because DRAQ™ is impermeable to intact cells, it may also be used as a viability dye. DRAQ™ has an excitation wavelength maximum of 599/644 nm, but can also be suboptimally excited by the 488 nm wavelength laser. Its emission wavelength maximum is 678 nm, or 694 nm when intercalated with double-stranded DNA.

Panel 1. Two-color flow cytometric analysis of Jurkat cell viability. Jurkat cells were treated with 5 µM Camptothecin (Left Plot) or DMSO vehicle (Right Plot) overnight. Cells were resuspended in Annexin V Binding Buffer (Cat. No. 556454) and stained with FITC Annexin V (Cat. No. 556419) and 1.25 µM DRAQ™. Camptothecin-treated cells show an increased frequency of apoptotic (Annexin V⁺ DRAQ™⁻) and dead (Annexin V⁺ DRAQ™⁺) cells. Analysis was performed using a BD LSRFortessa™ Cell Analyzer System.

Panel 2. Flow cytometric analysis of HeLa cell DNA content. Cultured HeLa cells in log phase growth were harvested using Gibco® Cell Dissociation Buffer (Life Technologies), fixed, and permeabilized using the BD Pharmingen™ Transcription Factor Buffer Set (Cat. No. 562574/562725). Cells were resuspended in DPBS with 20 µM DRAQ™ and analyzed using a low BD LSRFortessa™ cytometer flow rate. Histograms were deconvoluted by FlowJo™ software into G0/G1, S, and G2/M populations.

Panel 3. Immunofluorescent staining of Alkaline Phosphatase on human embryonic stem (ES) cells. H9 human ES cells (WiCell, Madison, WI) passage 44 were cultured on mTeSR™1 medium (StemCell Technologies) and fixed with BD Cytofix™ fixation buffer (Cat. No. 554655). The fixed cells were stained with Alexa Fluor® 488 Mouse anti-Human Alkaline Phosphatase monoclonal antibody (pseudo-colored green, Cat. No. 561495). And 5 µM DRAQ™ (pseudo-colored red) was used as a nuclear counterstain. The images were captured on a BD Pathway™ 435 Cell Analyzer and merged using BD Attovision™ Software.

Preparation and Storage

Store undiluted at 4°C and protected from prolonged exposure to light. Do not freeze.

Application Notes

Recommended Assay Procedure:

Staining of Live Cells for Viability Analysis by Flow Cytometry
1. Obtain a single cell suspension.
2. Resuspend cells in 1× Dulbecco’s Phosphate Buffered Saline (DPBS) or other azide-free buffer containing 1-3 µM DRAQ™.
   a. The optimal concentration of DRAQ™ for viability analysis may vary by cell type. We recommend titrating the reagent for your cell type of interest in early experiments.
b. Additionally, apoptotic cells may stain with variable amounts of DRAQ™. We recommend co-staining with, eg, BD Pharmingen™ FITC Annexin V (Cat. No. 556419) if further analysis of apoptotic cells is desired.
3. Incubate 5 minutes at room temperature. No wash is necessary prior to analysis.
4. Proceed to analysis by flow cytometry.

Staining of Fixed Cells for DNA Content Analysis by Flow Cytometry
1. Obtain a single cell suspension.
2. Treat cells on ice for 30 minutes with 70-80% ice-cold ethanol.
   a. Ethanol fixation typically provides the most resolved histograms. However, this reagent has also been successfully used for DNA content analysis with the BD Pharmingen™ Transcription Factor Buffer Set (Cat. No. 562574/562725) or BD Cytofix™ Fixation Buffer (Cat. No. 554655) and BD Phosflow™ Perm III (Cat. No. 558050) protocol.
3. Wash cells once with BD Pharmingen™ Stain Buffer (FBS) (Cat. No. 554656).
4. Dilute DRAQ™ to 20 μM in 1× DPBS or other azide-free buffer immediately prior to use.
5. Stain cells for 5-15 minutes at a cell density of 0.5E6 cells/mL or less. No further wash is necessary prior to analysis.
   a. The optimal cell density and concentration of DRAQ™ for DNA content analysis may vary by cell type. Assay conditions should be optimized in early experiments for best results.
6. Proceed to analysis by flow cytometry.

Immunofluorescent Staining of Fixed Cells for Nuclear Visualization
1. Fix and permeabilize cells as desired.
2. Dilute DRAQ™ solution to 5-20 μM in 1× DPBS or other azide-free buffer immediately prior to use.
3. Add DRAQ™ solution to each sample at least 5 minutes before analysis.
4. Proceed to imaging. We recommend using a 715LP or longer wavelength filter, though the dye is well-detected in filters typically used to detect Alexa Fluor® 647 (eg, 660/20 or 692/40). Note that dsDNA-bound dye will fluoresce brightly in the nucleus and unbound dye may fluoresce dimly in the cytoplasm, allowing segmentation of the cytoplasmic and nuclear compartments.

Note: This reagent has been developed and certified for the Bioimaging application. However, a routine Bioimaging test is not performed on every lot.

Warning: DRAQ™ contains < 1% 1,5-BIS-[2-(DIMETHYLAMINO)ETHYLAMINO]-4,8-DIHYDROXANTHRACENE-9,10-DIONE

Hazard statements
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.

Precautionary statements
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash before reuse.
Call a POISON CENTER or doctor/physician if you feel unwell.
If skin irritation occurs: Get medical advice/attention.

Suggested Companion Products

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Name</th>
<th>Size</th>
<th>Clone</th>
</tr>
</thead>
<tbody>
<tr>
<td>554656</td>
<td>Stain Buffer (FBS)</td>
<td>500 mL</td>
<td>(none)</td>
</tr>
<tr>
<td>554657</td>
<td>Stain Buffer (BSA)</td>
<td>500 mL</td>
<td>(none)</td>
</tr>
<tr>
<td>554655</td>
<td>Fixation Buffer</td>
<td>100 mL</td>
<td>(none)</td>
</tr>
<tr>
<td>558050</td>
<td>Perm Buffer II</td>
<td>125 mL</td>
<td>(none)</td>
</tr>
<tr>
<td>556419</td>
<td>FITC Annexin V</td>
<td>200 mL</td>
<td>(none)</td>
</tr>
<tr>
<td>562574</td>
<td>Transcription Factor Buffer Set</td>
<td>100 Tests</td>
<td>(none)</td>
</tr>
<tr>
<td>562725</td>
<td>Transcription Factor Buffer Set</td>
<td>25 Tests</td>
<td>(none)</td>
</tr>
<tr>
<td>564902</td>
<td>DRAQ™</td>
<td>200 μL</td>
<td>(none)</td>
</tr>
<tr>
<td>564903</td>
<td>DRAQ™</td>
<td>50 μL</td>
<td>(none)</td>
</tr>
<tr>
<td>556454</td>
<td>Annexin V Binding Buffer, 10X concentrate</td>
<td>50 mL</td>
<td>(none)</td>
</tr>
</tbody>
</table>

BD Biosciences
bdbiosciences.com

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

1. DRAQ7™ is a registered trademark of BioStatus Ltd.
2. FlowJo is a trademark of Tree Star Inc.
3. Alexa Fluor® is a registered trademark of Molecular Probes, Inc., Eugene, OR.
4. mTESR™1 is a trademark of StemCell Technologies.
5. This antibody has been developed and certified for the bioimaging application. However, a routine bioimaging test is not performed on every lot. Researchers are encouraged to titrate the reagent for optimal performance.

References


