PRODUCT INFORMATION

PhenoVue DRAQ5, Total Cell Nuclear Stain

Overview

PhenoVue™ DRAQ5™ is a lipophilic and membrane permeable far-red DNA stain for live or fixed cells. It is closely related to PhenoVue DRAQ7™. Unlike the routinely used Hoechst 33342, PhenoVue DRAQ5 does not require UV excitation and has little spectral overlap with visible range chromophores. This property makes it readily used for multiplexing applications with other fluorophores, even with rhodamine-derived probes. It is spectrally compatible with simple viability dyes such as propidium iodide, and more sophisticated functional probes such as PhenoVue ROS-490 Reactive Oxygen species indicator, PhenoVue 551 Mitochondrial Stain, or PhenoVue Fluor 488 and 555 conjugates, as well as CFP, GFP and YFP tagged proteins.

This total cell nuclear stain allows robust cell event counting, while offering nuclear morphology, insights on DNA condensation, fragmentation, and cytoplasmic morphology from a weak differential staining of this compartment.

PhenoVue DRAQ5 is preferentially excited by red wavelengths (Ex. 646 nm) and peaks at 697 nm when bound to double stranded DNA. This stain is provided in an aqueous, ready-to-use solution which is usually added as the final step in a staining protocol. It is documented in HCS applications on imaging platforms.

Product Information

Product Name*	Part Number	Number of Vials per Unit	Quantity per Vial	Format	Shipping Conditions
PhenoVue DRAQ5, Total Cell Nuclear Stain, 50 µL	CP161	1	50 µL (5 mM - 250 nmol)	Liquid	Ambient
PhenoVue DRAQ5, Total Cell Nuclear Stain, 200 µL	CP162	1	200 µL (5 mM – 1 µmol)	Liquid	Ambient
PhenoVue DRAQ5, Total Cell Nuclear Stain, 1 mL	CP163	1	1 mL (5 mM – 5 µmol)	Liquid	Ambient

*DRAQ5™ is a trademark of BioStatus Limited.

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For the Better

Storage and Stability

- **Do not freeze.**
- Store at 2-8°C, protected from light.
- The stability of these products is guaranteed until the expiration date indicated on the vial, when stored as recommended and protected from light.
- Allow the reagents to warm up to room temperature for 15 mins before opening the vials, and aliquot.
- Aliquoted reagents must be stored at 2-8 °C.

Equivalent Number of Microplates

Product Name	When Used at Recommended Concentration	96-well Microplate (100 µL - 300 µL per Well)	384-well Microplate (25 µL - 90 µL per Well)	1536-well Microplate (4 µL - 12 µL per Well)
PhenoVue DRAQ5, Total Cell Nuclear Stain, 50 µL	5 µM	Approx. 2 to 5	Approx. 2 to 5	Approx. 3 to 8
PhenoVue DRAQ5, Total Cell Nuclear Stain, 200 µL	5 µM	Approx. 8 to 20	Approx. 8 to 20	Approx. 12 to 24
PhenoVue DRAQ5, Total Cell Nuclear Stain, 1 mL	5 µM	Approx. 32 to 80	Approx. 32 to 80	Approx. 48 to 96

See PerkinElmer's range of high-quality imaging microplates here: www.perkinelmer.com/category/microplates-imaging

Spectral and Photophysical Properties

Product Name	Molecular Weight	Maximum Excitation Wavelength (nm)	Maximum Emission Wavelength (nm)	Filter Set	Epsilon (ε in $M^{-1}.cm^{-1}$ at λ max)
PhenoVue DRAQ5, Total Cell Nuclear Stain	485.41 g/mol	646	697*	Cy5	22000

*When bound to dsDNA

Live- and Fixed-Cell Compatibility

Product Name	Live-Cell Staining	Fixation/Permeabilization Steps Post Live-Cell Staining	Fixed-Cell Staining
PhenoVue DRAQ5, Total Cell Nuclear Stain	Yes	Yes	Yes

Protocols

Cell Culture

Seed cells in imaging black wall, clear bottom microplates (or any other convenient cell culture vessels). Incubate in the appropriate cell culture conditions, usually 37 °C, 5% CO_2 until 50-70% confluency.

Staining

Final concentration and incubation time of PhenoVue DRAQ5 must be optimized according to the cell type.

1. Add 2 to 10 µM of PhenoVue DRAQ5 Nuclear Stain per well.

Note that high concentration of PhenoVue DRAQ5 may result in nonspecific staining of other cellular structures.

2. Incubate for 15 to 60 mins.
3. Acquire images using an imaging platform such as the Opera Phenix® Plus High Content Analysis System.

Note that for live cell imaging, acquisition must be performed within 2 hours.

Tips

- High concentration of PhenoVue DRAQ5 may result in nonspecific staining of other cellular structures.

Safety Information

Chemical reagents are potentially harmful, please refer to the Safety Data Sheet (SDS) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Applications

- High-Content Analysis / High-Content Screening
- Imaging Microscopy

Example Data

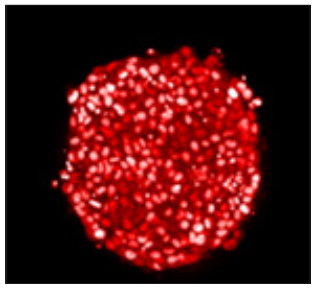

Figure 1: DRAQ5 stained spheroid imaged after 96 hours treatment in ScaleS4 clearing reagent.

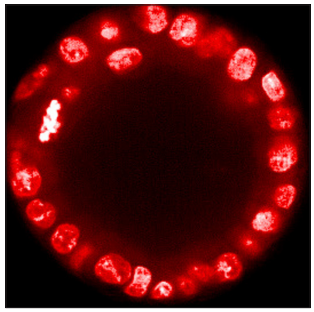

Figure 2: MDCK cyst stained with DRAQ5 and imaged on the Operetta® CLS™ high-content analysis system in confocal mode using a 40x water immersion objective.

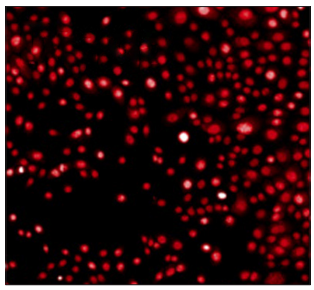

Figure 3: Human mammary epithelial cells stained with DRAQ5. Cells were imaged using a 20x high NA objective in widefield mode on the Operetta CLS system.

Related Products

Opera Phenix Plus High-Content Screening System
www.perkinelmer.com/operaphenixplus

Operetta CLS High-Content Analysis System
www.perkinelmer.com/operettaCLS

Harmony® Imaging and Analysis Software
www.perkinelmer.com/harmony

PhenoPlate™ high-quality microplates for imaging
www.perkinelmer.com/PhenoPlates

PhenoVue Cell Painting Kits
www.perkinelmer.com/PhenoVue

PhenoVue Fluor Secondary Antibody Conjugates
www.perkinelmer.com/PhenoVue

PhenoVue Organelle and Cell Compartment Stains
www.perkinelmer.com/PhenoVue

PhenoVue Complementary Reagents
www.perkinelmer.com/PhenoVue

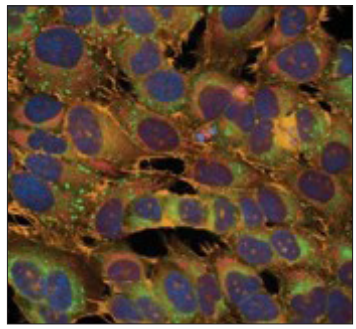

*Figure 4: HeLa cells were seeded in PhenoPlate 96-well microplates (15,000 cells/well) and incubated at 37 °C, 5% CO_2 for 48h. Live cells were stained with **PhenoVue 641 Mitochondrial stain** (0.5 µM) for 30 min at 37 °C, then fixed and permeabilized. Next, cells were incubated with a Cell Painting mix which includes **PhenoVue 512 Nucleic Acid stain (3 µM), PhenoVue Hoechst 33342 nuclear stain (5 µg/mL), PhenoVue Fluor 568 - Phalloidin (33 nM), PhenoVue Fluor 488 - Concanavalin A (100 µg/mL) and PhenoVue Fluor 555 - WGA** for 30 min at RT. Images were acquired on the Operetta CLS high-content analysis system.*

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