biotium Glowing products for science

Call us : 800-304-5357

DAPI

DAPI is a popular blue fluorescent DNA dye. The dye binds to the minor groove of dsDNA with approximately 20-fold fluorescence enhancement.



Product attributes

CAS number	28718-90-3 (DAPI, Dihydrochloride), 28718-91-4 (DAPI, Dilactate)
Probe cellular localization	Nucleus
For live or fixed cells	For fixed cells
Detection method/readout	Fluorescence microscopy, Flow cytometry
Assay type/options	DNA content/cell cycle profiling by flow cytometry, Tissue staining
Cell permeability	Membrane permeant
Apoptosis/viability marker	All cell stain
Colors	Blue
Excitation/Emission	358/461 nm (with DNA)
Storage Conditions	Store at 2 to 8 °C, Protect from light

Product Description

DAPI (4',6-Diamidino-2-Phenylindole, dihydrochloride) is a popular blue DNA dye that is used as a nuclear counterstain in fluorescence microscopy, chromosome staining, and flow cytometry. The dye binds to the minor groove of dsDNA with approximately 20-fold fluorescence enhancement, with higher affinity for A-T rich regions.

- Classic blue nuclear counterstain for fixed cells
- Available as a powder or solution
- $\lambda_{Ex}/\lambda_{Em}$ (with DNA) = 358/461 nm
- Store at 4 °C and protect from light, especially in solution

DAPI as a dilactate powder is more water soluble than the dihydrochloride salt, and therefore a better choice for preparing stock solutions in water. If mounting media will be used, we also offer anti-fade mounting media containing DAPI, in both hardset and wetset formulations. Having trouble with your experiments? See our section on troubleshooting tips for fluorescent staining.

Product	Catalog Number	MW	Unit Size	Format
DAPI Powder (dilactate)	40009	457.49	10 mg	Yellow solid
DAPI Powder (dihydrochloride)	40011	350.25	10 mg	Yellow solid
DAPI Solution (dilactate)	40043	457.49	1 mL (10 mg/mL in water)	Yellow solution

Find the Right Nuclear Stain for Your Application

DAPI can be used to stain mammalian cells as well as gram-positive and gram-negative bacteria. In yeast, the staining is weak and not nuclear. DAPI is less membrane permeant than Hoechst, and is typically used to stain fixed cells. On the other hand, Hoechst dyes are membrane-permeant and more often used for live or fixed cell staining and cell cycle analysis. While Hoechst and DAPI show less cytotoxicity than intercalating DNA dyes, they bind DNA in living cells and are potentially hazardous. DAPI and Hoechst undergo photoconversion by UV excitation to form green fluorescent dyes, which can lead to artifacts in multi-color imaging. See our Tech Tip Avoiding Artifacts from UV Photoconversion of DAPI and Hoechst for more information.

Biotium also offers unique NucSpot® Nuclear Stains for bright and specific nuclear staining in dead or fixed cells. The stains are available in a wide range of colors from green to near-IR. See our Cellular Stains Selection Guide and Cellular Stains Table for more information on other nuclear stains we offer.

References

1. Gastroenterology, 158, 985, (2020), DOI: 10/ggt7b5
2. Front. Cell Dev. Biol., 7, 321, (2020), DOI: 10/ggt677
3. Int. J. Biol. Sci., 16, 1586, (2020), DOI: 10/ggt7nv
4. Poultry Science, 99, 1209, (2020), DOI: 10/ggt7cj
5. Acta Biomaterialia, 107, 138, (2020), DOI: 10/ggt8d9
6. Int. J. Med. Sci., 17, 480, (2020), DOI: 10/ggt8fb
7. Nat Commun, 11, 1416, (2020), DOI: 10/ggt74m
8. Polymers, 12, 329, (2020), DOI: 10/ggt8fg
9. Biomed Pharmacother., 119, 109420, (2019), DOI: 10/ggt7cw
10. Redox Biology, 26, 101220, (2019), DOI: 10/ggt7dg
11. Front. Cell Dev. Biol., 7, 224, (2019), DOI: 10/ggszm9
12. Sci Rep, 9, 2102, (2019), DOI: 10/ggt7mq
13. Nanoscale, 11, 18255, (2019), DOI: 10/ggt8ff
14. Am J Physiol Gastrointest Liver Physiol, 317, G531, (2019), DOI: 10/ggt8fh
15. Ecotoxicol Environ Saf., 183, 109583, (2019), DOI: 10/ggt7c9
16. Biotechnic Histochem, 70, 220, (1995), DOI: 10.3109/10520299509108199