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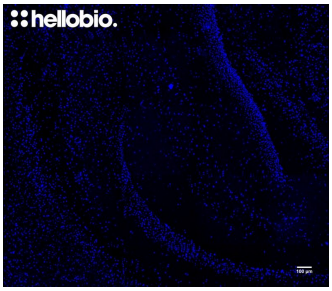
DATASHEET

Hoechst 33342

Product overview

Name	Hoechst 33342
Cat No	HB0787
Alternative names	H33342, Bisbenzimide H 33342
Biological action	Dyes & stains
Purity	>98%
Description	Blue fluorescent DNA stain. Cell permeable. Nuclear stain.

Images



Biological Data

Biological description

Overview

Blue fluorescent DNA stain that is commonly used in fluorescent microscopy. It is frequently used as a nuclear stain to stain nuclei. It is excited by UV light.

Hoechst 33342 is cell permeable and has greater cell permeability than Hoechst 33258. The stain can be used on both live and fixed cells and is often used as an alternative to DAPI.

Hoechst 33342 binds to the AT-rich regions of the minor grove in DNA which renders it specific for nuclear chromatin. Its fluorescent intensity depends on the DNA content, chromatin structure and the position of the cell within the cell cycle.

Uses and applications

There is little fluorescent overlap with other commonly used small-molecule fluorophores / fluorescent proteins that emit in the green / red range. This makes it suitable for a wide range of applications.

Counterstain
Hoechst 33342 is commonly used as a counterstain in fluorescent imaging.

Cell cycle studies / Apoptosis

Hoechst 33342 can stain the condensed nuclei of apoptotic cells to allow the identification of chromatin condensation and fragmentation. It is commonly used with propidium iodide to distinguish normal/live apoptotic and dead cell populations. It can additionally be used in conjunction with arcidine orange (AO) to distinguish apoptotic cells.

Incorporation of Brdu into DNA has a quenching effect on Hoechst fluorescence. Hoechst 33342 is also used in combination with BrdU to monitor cell cycle progression.

Stem cells

Combination of the Hoechst 33342 stain with surface-marker phenotyping allows the characterisation of a sub-population of stem cells termed the 'side population' (SP).

Application notes

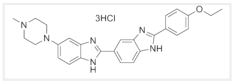
#Protocol 1: Hoechst 33342 staining of mouse brain sections.

- 400µm mouse brain sections were cut using a vibratome and were incubated in carbogen bubbled artificial cerebral spinal fluid (aCSF).
- Sections were incubated in 1µg/ml Hoechst 33342 in aCSF for 20 minutes at 37°C before being washed for 10 minutes in aCSF.
- Sections were imaged on a Leica SP8 AOBS confocal laser scanning microscope using the 405nm laser line.

Solubility & Handling

Storage instructions	-20°C
Solubility overview	Soluble in water, and in DMSO
Important	This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use.

Chemical Data

Chemical name	2-(4-ethoxyphenyl)-6-[6-(4-methylpiperazin-1-yl)-1H-benzimidazol-2-yl]-1H-benzimidazole
Molecular Weight	561.93
Chemical structure	
Molecular Formula	$C_{27}H_{28}N_6O.3HCl$
CAS Number	875756-97-1
PubChem identifier	1464
SMILES	CCOC1=CC=C(C=C1)C2=NC3=C(N2)C=C(C=C3)C4=NC5=C(N4)C=C(C=C5)N6CCN(CC6)C
InChi	InChI=1S/C27H28N6O/c1-3-34-21-8-4-18(5-9-21)26-28-22-10-6-19(16-24(22)30-26)27-29-23-11-7-20(17-25(23)31-27)33-14-12-32(2)13-15-33/h4-11,16-17H,3,12-15H2,1-2H3,(H,28,30)(H,29,31)
InChiKey	PRDFBSVERLRRMY-UHFFFAOYSA-N
MDL number	MFCD00012678

References

Labeling nuclear DNA with hoechst 33342.

Chazotte B (2011) Cold Spring Harb Protoc 2011(1)
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Hoechst 33342 stain and u.v. laser exposure do not induce genotoxic effects in flow-sorted boar spermatozoa.

Parrilla I *et al* (2004) Reproduction 128(5)
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Phototoxicity of Hoechst 33342 in time-lapse fluorescence microscopy.

Purschke M *et al* (2010) Photochem Photobiol Sci 9(12)
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