

Ion Detection

Targeted Cellular Staining

Cell Viability and Cell Death

Reactive Oxygen Detection

Reactive Dyes & Stains

About Enzo Life Sciences, Inc.

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Sale terms are net 30 days. The product price does not include shipping and handling fees. Please inquire about shipping and handling fees. Prices are subject to change without notice.

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Our e-commerce web site (www.enzolifesciences.com) contains the most up-to-date information on our products, such as current product price, certificate of analysis, material safety data sheet, references, purity, solubility, and storage conditions. For technical assistance please contact the appropriate sales office or call 800.942.0430/610.941.0430.

Returns

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For bulk orders, we will provide a quotation at your request. Please call the appropriate sales office with the following information: Your phone, fax, e-mail and mailing address, Enzo Life Sciences product code and name, Quantity, Date needed

Can Enzo Life Sciences accelerate your discovery environment?

Absolutely.



The CELLestial™ brand of Enzo Life Science products represents a comprehensive family of dyes, labels, probes and markers for identifying pathways, functions and other cellular events. These products build upon a strong foundation in labeling and detection and represent a new direction that expands beyond our historic focus in molecular biology and genomics.

Application Areas

- Target, Pathway and Cell Signaling Analysis
- Reactive Oxygen Species Detection
- Apoptosis and Cell Viability
- Organelle Targeting Dyes and Reagents
- High Content Screening & Analysis
- Live Cell and Flow Cytometry Analysis

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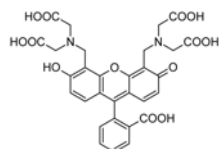
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I-1. Ion Detection: Calcium Indicators

Calcein, Ultra Pure

Bis[*N,N*-bis(carboxymethyl)aminomethyl]fluorescein [CAS: 1461-15-0]

MW:	622.53
Wavelength Maxima:	Excitation 495 nm, Emission 515 nm
Quantity:	100 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52001	100 mg	75

Description:

Calcein is a fluorescent calcium indicator that emits a yellowish-green fluorescence under acidic conditions and is minimally fluorescent under basic conditions. Calcein also fluoresces in the presence of certain metal cations such as Al (III), Ba (II), Cu (II), Mg (II), Hg (II) and Zn (II) under basic conditions. Therefore, calcein can be used for direct fluorimetric titration of these heavy metal ions as well as Ca (II). Calcein self-quenches at concentrations above 100 mM and

is slightly water soluble. The membrane impermeable probe can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading.

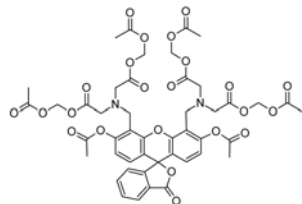
References:

1. Lista et al Talanta 1999 50(4):881-5.
2. Saito et al J Chromatogr A. 2007 1140(1-2):230-5.

Calcein AM, Ultra Pure

N,N'-[[3',6'-bis(acetyloxy)-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthene]-4',5'-diyl]bis(methylene)]bis[*N*-[2-[(acetyloxy)methoxy]-2-oxoethyl]-,bis[(acetyloxy)methyl] ester [CAS: 148504-34-1]

MW:	994.86
Wavelength Maxima:	Excitation 495 nm, Emission 515 nm
Quantity:	1 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Calcein acetomethoxy (AM), a derivative of calcein, is useful for differentiating between live and dead cells. Calcein AM readily passes through the cellular plasma membrane. Once inside, esterases cleave the AM groups yielding the more hydrophilic calcein, trapped inside the cell. The loss of the acetomethoxy group also enables calcein to readily bind intracellular calcium; resulting in a strong yellowish-green fluorescence. As dead cells lack cytoplasmic esterases,

fluorescence is demonstrated exclusively in live cells, making the probe useful for determining cell viability. Calcein-AM exhibits low cytotoxicity and does not significantly affect cellular functions such as proliferation or chemotaxis. Viability assays using calcein correlate well with other assays, such as ⁵¹Cr-release.

Reference:

1. Decherchi et al J Neurosci Methods. 1997 71(2):205-13.

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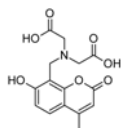
I-1. Ion Detection: Calcium Indicators

Ion
Detection

Calcein Blue, Ultra Pure

4-Methylumbelliferone-8-methyliminodiacetic acid [CAS: 54375-47-2]

MW:	321.28
Wavelength Maxima:	Excitation 360 nm, Emission 445 nm
Quantity:	250 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52003	250 mg	75

Description:

Calcein Blue has similar calcium-binding properties as calcein. Like calcein, it is typically used for metallochromic titration of metal ions with EDTA and demonstrates enhanced fluorescence upon binding Ca (II), Zn (II) or La (II). Binding of Mn (II), Fe (II), Co (II), Ni (II) and Cu (II) results in a reduction in fluorescence. In addition, the probe is also used as a reference standard for calcein AM. The probe also finds

application in cell-based assays for measuring mineralized-tissue formation by cultured osteoblastic cells.

References:

1. Goto et al Biomaterials. 2003 24(22):3885-92.
2. Matsoukas and Demertzis Analyst. 1988 113(2):251-3.

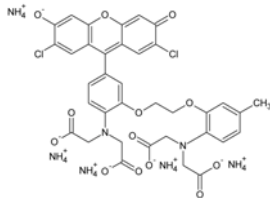
Cellular
Staining

Cell
Viability

Fluo-3, Ultra Pure

N-[2-[[[2-[bis(carboxymethyl)amino]-5-(2,7-dichloro-6-hydroxy-3-oxo-3H-xanthen-9-yl)phenoxy]methyl]methyl]oxy]-4-methylphenyl]-N-(carboxymethyl)-,pentammonium salt [CAS: 339221-91-9]

MW:	854.69
Wavelength Maxima:	Excitation 506 nm, Emission 526 nm
Quantity:	1 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52005	1 mg	150

Description:

Fluo-3 is widely used in flow cytometry, confocal laser-scanning microscopy and fluorescence spectroscopy. The probe has proved particularly valuable for determining GPCR function via cell-based high-throughput screening. Fluo-3 is a membrane impermeable probe and can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading.

Once inside the cell, Fluo-3 becomes fluorescent, in the presence of free Ca (II). Fluo 3 is a long wavelength calcium probe (488 nm excitable). The longer wavelength of absorption is convenient for minimizing photodamage in cells.

References:

1. Zhang et al Anal Quant Cytol Histol. 2000 22(2):93-7.

NO/RO
Detection

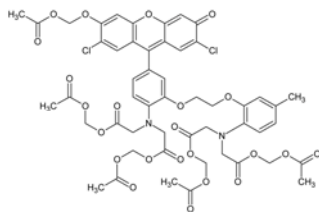
Reactive
Dyes &
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I-1. Ion Detection: Calcium Indicators

Fluo-3 AM, Ultra Pure

N-[4-[6-[(acetyloxy)methoxy]-2,7-dichloro-3-oxo-3Hxanthen-9-yl]-2-[2-[2-[bis[2-[(acetyloxy)methoxy]-2-oxyethyl] amino]-5-methylphenoxy]ethoxy]phenyl]-N-[2-[(acetyloxy)methoxy]-2-oxyethyl]-, (acetyloxy)methyl ester [CAS: 121714-22-5]

MW:	1129.85
Wavelength Maxima:	Excitation 506 nm, Emission 526 nm
Quantity:	1 mg
Purity:	>95 % by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Fluo-3 AM is widely used in flow cytometry, confocal laser-scanning microscopy and fluorescence spectroscopy. The probe has proved particularly valuable for determining GPCR function via cell-based high-throughput screening. Fluo-3 AM is a membrane permeable probe and can be passively loaded in cells by simple incubation. Once inside the cell, Fluo-3 becomes fluorescent in the presence of free Ca (II). Fluo-3 is a long wavelength calcium indicator probe (488 nm excitable).

Ordering Information

Product code	Unit	Price (USD)
52004	1 mg	200

The longer wavelength of absorption is convenient for minimizing photodamage in cells.

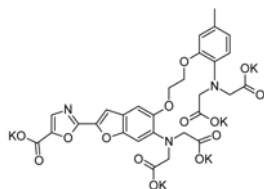
References:

1. Zhang et al *Anal Quant Cytol Histol.* 2000 22(2):93-7.
2. Bailey and Macardle *J Immunol Methods.* 2006 311(1-2):220-5.

Fura-2, Ultra Pure

5-Oxazolecarboxylic acid, 2-(6-(bis(carboxymethyl)amino)-5-(2-(2-(bis(carboxymethyl) amino)-5-methylphenoxy)ethoxy)-2-benzofuranyl)-, pentapotassium salt [CAS: 113694-64-7]

MW:	832.00
Wavelength Maxima:	Excitation 363 nm, Emission 512 nm
Quantity:	1 mg
Purity:	>95 % by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Fura-2 is one of the most widely used calcium indicators for homogenous quantitative dual wavelength ratiometric cell measurements. Fura-2 is particularly useful for digital imaging microscopy. It is less susceptible to photobleaching than Indo-1. The probe is excited only by UV light, which results in significantly less interference by visible wavelength excitable fluorescent compounds. One application of the probe is as a useful counter screen tool for GPCR and calcium channels

Ordering Information

Product code	Unit	Price (USD)
52007	1 mg	75

identified using calcium indicators excited at 488nm in primary screens. Fura-2 is a membrane impermeable probe and can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading.

Reference:

1. Hirst et al *Methods Mol Biol.* 2006312:37-45.

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Cell
Viability

NO/RO
Detection

Reactive
Dyes &
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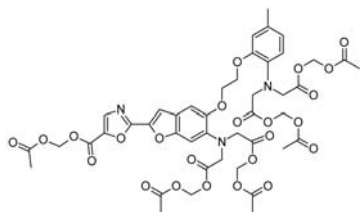
I-1. Ion Detection: Calcium Indicators

Ion
Detection

Fura-2 AM, Ultra Pure

5-Oxazolecarboxylic acid, 2-(6-(bis(carboxymethyl)amino)-5-(2-(2-(bis(carboxymethyl) amino)-5-methylphenoxy)ethoxy)-2-benzofuranyl)-, (acetyloxy)methyl ester [CAS: 108964-32-5]

MW: 1001.86
Wavelength Maxima: Excitation 370 nm, Emission 476 nm
Quantity: 1 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Description:

Fura-2 acetomethoxy (AM) is one of the most widely used calcium indicators for homogenous quantitative dual wavelength ratiometric cell measurements. Fura-2 AM is particularly useful for digital imaging microscopy. It is less susceptible to photobleaching than Indo-1. The probe is excited only by UV light, which results in significantly less interference by visible wavelength excitable fluorescent compounds. One application of the probe is as a useful counter screen tool for

Ordering Information

Product code	Unit	Price (USD)
52006	1 mg	125

GPCR and calcium channel hits identified using calcium indicators excited at 488nm in primary screens. Fura-2 AM can be easily loaded into cells by passive incubation.

References:

1. Hirst et al Methods Mol Biol. 2006 312:37-45.
2. McConnell et al Opt Lett. 2003 28(19):1742-4.

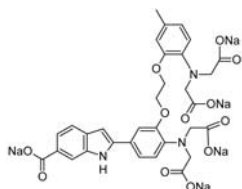
Cellular
Staining

Cell
Viability

Indo-1, Ultra Pure

1H-Indole-6-carboxylic acid, 2-[4-[bis[2-[(acetyloxy)methoxy] 2-oxoethyl]amino]-3-[2-[2-[bis[2-[(acetyloxy)methoxy]-2-oxoethyl]amino]-5 methylphenoxy]ethoxy]phenyl]- pentasodium salt

MW: 759.52
Wavelength Maxima: Excitation 346 nm, Emission 475 nm
Quantity: 1 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Description:

Indo-1 is a popular UV-excitable calcium indicator, similar to Fura-2. In contrast to Fura-2, Indo-1 has a dual emission peak. The main emission peak in calcium-free solution is 475 nm while in the presence of calcium the emission is shifted to 400 nm. Indo-1 is a membrane impermeable probe and can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading. The probe is widely used in flow cy-

Ordering Information

Product code	Unit	Price (USD)
52009	1 mg	125

tometry. For this application, it is critical to have an instrument with an argon laser tuned to UV or a helium-cadmium laser available.

References:

1. Nelemans A. Methods Mol Biol. 2006 312:47-53.
2. Bailey and Macardle J Immunol Methods. 2006 311 (1-2):220-5.

NO/RO
Detection

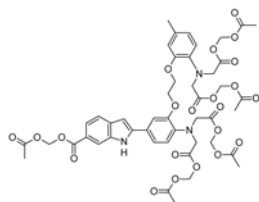
Reactive
Dyes &
Stains

I-1. Ion Detection: Calcium Indicators

Indo-1 AM, Ultra Pure

1H-Indole-6-carboxylic acid, 2-[4-[bis[2-[(acetyloxy)methoxy] 2-oxoethyl]amino]-3- [2-[2-[bis[2-[(acetyloxy)methoxy]-2-oxoethyl] amino]-5-methylphenoxy]ethoxy]phenyl]-, (acetyloxy)methyl ester [CAS: 112926-02-0]

MW: 1001.86
Wavelength Maxima: Excitation 370 nm, Emission 476 nm
Quantity: 1 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Description:

Indo-1 acetomethoxy (AM) is a popular UV-excitabile calcium indicator, similar to Fura-2. In contrast to Fura-2, Indo-1 has a dual emission peak. The main emission peak in calcium-free solution is 475 nm while in the presence of calcium the emission is shifted to 400 nm. Indo-1 AM is a membrane permeable probe and can be easily loaded into cells by passive incubation. The probe is widely used in flow cytometry. For

Ordering Information

Product code	Unit	Price (USD)
52008	1 mg	125

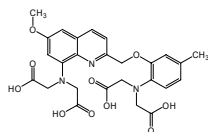
this application, it is critical to have an instrument with an argon laser tuned to UV or a helium-cadmium laser available.

References:

1. Nelemans A. Methods Mol Biol. 2006 312:47-53.
2. Bailey and Macardle J Immunol Methods. 2006 311(1-2):220-5.

Quin-2, Ultra Pure

MW: 693.87
Wavelength Maxima: Excitation 346 nm, Emission 475 nm
Quantity: 5 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Description:

Quin-2 demonstrates a strong affinity for calcium, resulting in a marked shift in ultraviolet absorption and fluorescence spectra versus the unbound state. Quin-2 resembles calcium chelator EGTA in its ability to bind calcium more tightly than magnesium. Quin-2 is a membrane impermeable probe and can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading. Quin-2 has lower absorptivity and

Ordering Information

Product code	Unit	Price (USD)
52013	5 mg	125

quantum yield values than Fura-2, Indo-1, Fluo-3 and Fluo-4, thus requiring higher loading concentrations.

References:

1. Lakowicz et al Cell Calcium. 1994 15(1):7-27.
2. Lakowicz et al Cell Calcium. 1992 13(3):131-47.

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Viability

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Detection

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Dyes &
Stains

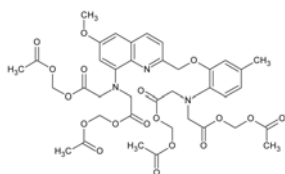
I-1. Ion Detection: Calcium Indicators

Ion
Detection

Quin-2 AM, Ultra Pure

N-[2-[(acetyloxy)methoxy]-2-oxoethyl]-N-[2-[[8-[bis[2-[(acetyloxy)methoxy]-2-oxoethyl]amino]-6-methoxy-2-quinolinyl]methoxy]-4-methylphenyl]-(acetyloxy)methyl ester [CAS: 83104-85-2]

MW: 829.76
Wavelength Maxima: Excitation 346 nm, Emission 475 nm
Quantity: 1 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Ordering Information

Product code	Unit	Price (USD)
52012	1 mg	125

Description:

Quin-2 AM demonstrates a strong affinity for calcium, resulting in a marked shift in ultraviolet absorption and fluorescence spectra versus the unbound state. Quin-2 resembles calcium chelator EGTA in its ability to bind calcium more tightly than magnesium. Quin-2 AM is an acetoxymethyl ester derivative of Quin-2 that can be easily loaded into cells by passive incubation. Quin-2 has lower absorptivity and quantum yield values than Fura-2, Indo-1, Fluo-3 and Fluo-4, thus requiring higher loading concentrations.

References:

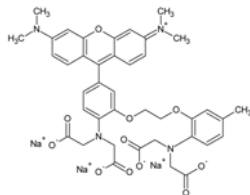
1. Lakowicz et al Cell Calcium. 1994 15(1):7-27.
2. Lakowicz et al Cell Calcium. 1992 13(3):131-47.

Cellular
Staining

Cell
Viability

Rhod-2, Ultra Pure

MW: 820.73
Wavelength Maxima: Excitation 549 nm, Emission 578 nm
Quantity: 1 mg
Purity: >90% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Ordering Information

Product code	Unit	Price (USD)
52011	1 mg	225

Description:

Rhod-2 has the longest fluorescent emission signal of the commonly used calcium indicators and is suitable for use with argon and krypton laser excitation sources. Rhod-2 signal intensity is one of the strongest as well. Rhod-2 is especially suitable for intracellular calcium monitoring by confocal laser-scanning microscopy and flow cytometry. The dissociation constant of Rhod-2 with calcium is among the highest of all the fluorescent calcium probes, providing a wider range for

monitoring calcium concentration. Rhod-2 is a membrane impermeable probe and can be loaded in cells by microinjection, electroporation or scrape loading. The acetomethoxy (AM) version is necessary for passive cell loading.

References:

1. Du et al Cell Calcium. 2001 29(4):217-27.
2. Muriel et al J Comp Neurol. 2000 426(2):297-315.

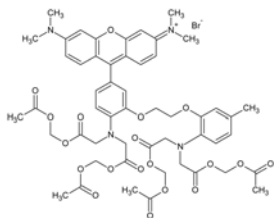
NO/RO
Detection

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I-1. Ion Detection: Calcium Indicators

Rhod-2 AM, Ultra Pure

MW:	1123.96
Wavelength Maxima:	Excitation 549 nm, Emission 578 nm
Quantity:	1 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Rhod-2 AM has the longest fluorescent emission signal of the commonly used calcium indicators. It contains a rhodamine-like fluorophore, making it suitable for use with argon and krypton laser excitation sources. Rhod-2 signal intensity one of the strongest of all the calcium probes. Rhod 2 is especially suitable probe for intracellular calcium monitoring by confocal laser-scanning microscopy and flow cytometry. The dissociation constant of Rhod 2 with calcium is among the highest of

Ordering Information

Product code	Unit	Price (USD)
52010	1 mg	225

all the fluorescent calcium probes, providing a wider range for monitoring calcium concentration. Rhod-2 AM is an acetoxymethyl ester derivative of Rhod-2 that can be easily loaded into cells by passive incubation.

References:

1. Du et al Cell Calcium. 2001 29(4):217-27.
2. Muriel et al J Comp Neurol. 2000 426(2):297-315.

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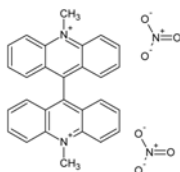
I-2. Ion Detection: Chloride Indicators

Ion
Detection

Lucigenin [Bis-N-methylacridinium nitrate], Ultra Pure

9,9'-Biacridinium, 10,10'-dimethyl- [CAS: 22103-92-0]

MW:	510.5
Wavelength Maxima:	Excitation 455 nm, Emission 505 nm
Quantity:	10 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Lucigenin is a blue-green fluorescent chloride ion indicator that is more sensitive and selective than ^{36}Cl and microelectrode-based methods for chloride measurement in cells. Lucigenin is a fluorescent indicator that is quenched via collision with chloride. The probe is suitable for detection of chloride concentrations in liposomes, reconstituted membranes or in extracellular medium. Lucigenin may also be used as a

Ordering Information

Product code	Unit	Price (USD)
52154	10 mg	75

chemiluminescent probe for the detection of superoxide in biological systems.

Reference:

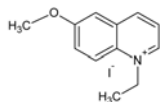
1. Wissing and Smith *J Membr Biol.* 2000 177(3):199-208
2. Kervinen et al. *Anal Biochem.* 2004 324(1):45-51

Cellular
Staining

Cell
Viability

MEQ [6-Methoxy-N-ethylquinolinium iodide], Ultra Pure

MW:	315.15
Wavelength Maxima:	Excitation 344 nm, Emission 442 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

MEQ is a fluorescent chloride ion indicator that is more sensitive and selective than ^{36}Cl and microelectrode-based methods for chloride measurement in cells. MEQ is a fluorescent indicator that is quenched via collision with chloride. The probe is suitable for detection of chloride concentrations in liposomes, reconstituted membranes or in extracellular medium. As a UV-excitable indicator, MEQ can be detected

Ordering Information

Product code	Unit	Price (USD)
52155	100 mg	75

using an argon-ion laser for confocal microscopy and flow cytometry applications.

References:

1. Mahlangu and Dix *Anal Biochem.* 2004 325(1):28-34.
2. Inglefield and Schwartz-Bloom *Methods Enzymol.* 1999 307:469-81.

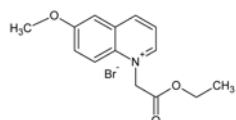
NO/RO
Detection

Reactive
Dyes &
Stains

I-2. Ion Detection: Chloride Indicators

MQAE [N-(Ethoxycarbonylmethyl)-6-methoxyquinolinium bromide], Ultra Pure

MW:	326.19
Wavelength Maxima:	Excitation 350 nm, Emission 460 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

MQAE is a fluorescent chloride ion indicator that is more sensitive and selective than ^{36}Cl and microelectrode-based methods for chloride measurement in cells. MQAE is a fluorescent indicator that is quenched via collision with chloride. The probe is suitable for detection of chloride concentrations in liposomes, reconstituted membranes or in extracellular medium. As a UV-excitable indicator, MEQ can be detected using an argon-ion laser for confocal microscopy and flow

Ordering Information

Product code	Unit	Price (USD)
52156	100 mg	75

cytometry applications. MQAE has greater sensitivity than SPQ and higher fluorescence quantum yield. The ester group of MQAE may slowly hydrolyze inside cells, resulting in a change in its fluorescence response.

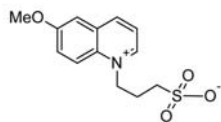
References:

1. Munkonge et al J Cyst Fibros. 2004 3 Suppl 2:171-6.
2. Lai et al Eur J Pharmacol. 2003 482(1-3):1-8.

SPQ [6-methoxy-N-(3-sulfopropyl)quinolinium], Ultra Pure

Quinolinium, 6-methoxy-1-(3-sulfopropyl)-, hydroxide, inner salt [CAS: 83907-40-8]

MW:	281.33
Wavelength Maxima:	Excitation 344 nm, Emission 433 nm
Quantity:	25 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

SPQ is a fluorescent chloride ion indicator that is more sensitive and selective than ^{36}Cl and microelectrode-based methods for chloride measurement in cells. SPQ is a fluorescent indicator that is quenched via collision with chloride. The probe is suitable for detection of chloride concentrations in liposomes, reconstituted membranes or in extracellular medium. SPQ has been loaded in vitro, using a hypotonic

method and fluorescence detected using UV laser by flow cytometry.

References:

1. Lee et al J Physiol. 2007 582(Pt 3):1099-124.
2. Pilas and Durack. Cytometry. 1997 28(4):316-22.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

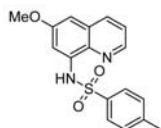
I-3. Ion Detection: Zinc Indicators

Ion
Detection

TSQ, Ultra Pure

N-(6-Methoxy-8-quinolyl)-p-toluenesulfonamide [CAS: 109628-27-5]

MW:	328.38
Wavelength Maxima:	Excitation 344 nm, Emission 485 nm
Quantity:	25 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

TSQ is one of the most efficient membrane-permeable fluorescent probes for zinc (II). It is selective for Zn (II) in the presence of physiological concentrations of Ca (II) and Mg (II) ions. Fluorescence of Zinquin ethyl ester is enhanced upon binding Zn (II), but the probe does not demonstrate a shift or change in emission wavelength. TSQ forms a largely insoluble 2:1 (Ligand-Metal) complex with zinc and emits blue light upon excitation at 365 nanometers. TSQ has been exten-

Ordering Information

Product code	Unit	Price (USD)
52153	25 mg	75

sively applied to study Zn(II) in mossy fibers of the hippocampus. TSQ has been used to monitor intracellular zinc fluxes associated with apoptosis as well.

References:

1. Nitzan et al J Histochem Cytochem. 2004 52(4):529-39.
2. Sauer et al. J Cell Biochem. 2003 Apr 1 88(5):954-69.

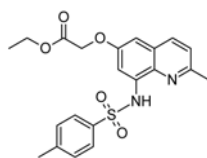
Cellular
Staining

Cell
Viability

Zinquin ethyl ester, Ultra Pure

2-Methyl-8-(4-methylphenylsulfonylamino)quinolinyloxyacetic acid ethyl ester [CAS: 151606-29-0]

MW:	414.5
Wavelength Maxima:	Excitation 368 nm, Emission 490 nm
Quantity:	5 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Zinquin ethyl ester is a lipophilic, zinc-sensitive, fluorescent derivative of Zinquin that is able to penetrate cell membranes. Cleavage of the ethyl ester group via cytosolic esterases in living cells impedes its efflux across the plasma membrane. It is selective for Zn (II) in the presence of physiological concentrations of Ca (II) and Mg (II) ions. Fluorescence of Zinquin ethyl ester is enhanced upon binding Zn (II), but the probe does not demonstrate a shift or change in emission wave-

Ordering Information

Product code	Unit	Price (USD)
52151	5 mg	125

length. The probe is UV-excitable and emits in the blue region of the spectrum. Zinquin ethyl ester has been used to monitor intracellular zinc fluxes associated with apoptosis.

References:

1. Helmersson et al. Plant Physiol. 2008;147(3):1158-67.
2. Leung et al Invest Ophthalmol Vis Sci. 2008 49(3):1221-31.

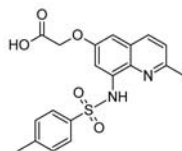
NO/RO
Detection

Reactive
Dyes &
Stains

I-3. Ion Detection: Zinc Indicators

Zinquin free acid, Ultra Pure

MW:	386.42
Wavelength Maxima:	Excitation 368 nm, Emission 490 nm
Quantity:	5 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Zinquin free acid is a membrane impermeable, zinc-sensitive, fluorescent dye. The ethyl ester version is necessary for passive cell loading. It is selective for Zn (II) in the presence of physiological concentrations of Ca (II) and Mg (II) ions. The probe can also detect Cd (II). Fluorescence of Zinquin is enhanced upon binding Zn (II), but the probe does not demonstrate a shift or change in emission wavelength. The probe is UV-excitable and emits in the blue region of the

Ordering Information

Product code	Unit	Price (USD)
52152	5 mg	125

spectrum. Zinquin has been used to monitor intracellular zinc fluxes associated with apoptosis.

References:

1. Zalewski et al Biochem J. 1993 296 (Pt 2):403-8.
2. Zalewski et al Chem Biol. 1994 1(3):153-61.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

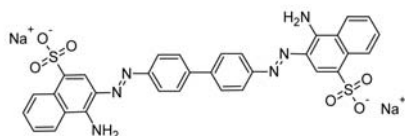
Reactive
Dyes &
Stains

II-1. Cellular Staining: Amyloid Detection

Ion
Detection

Congo Red, Ultra Pure

MW:	696.66
Wavelength Maxima:	Excitation 497 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52552	100 mg	75

Cellular
Staining

Description:

Congo Red, has been used in microscopy for staining elastic fibers and bacteria. Amyloid protein, an abnormal protein aggregate associated with various pathologies, is commonly detected in tissue with Congo Red. Detection of amyloid is relevant for a whole host of diseases, including Alzheimer's disease, Creutzfeld-Jakob's disease and Bovine Spongiform Encephalopathy. The birefringence of Congo Red-stained amyloid, appearing green under polarized light, improves

detection relative to simple visible examination of the colored deposits. Additionally, upon binding to amyloid, Congo Red displays bright fluorescence emission at 614 nm.

References:

1. Howie et al Lab Invest. 2008 88(3):232-42.
2. Wilcock et al Nat Protoc. 2006 1(3):1591-5.

Cell
Viability

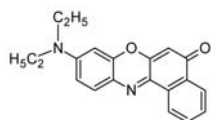
NO/RO
Detection

Reactive
Dyes &
Stains

II-2. Cellular Staining: Lipid Detection

Nile Red, Ultra Pure

MW:	318.37
Wavelength Maxima:	Excitation 552 nm, Emission 636 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Nile red is a lipophilic probe that becomes intensely fluorescent in a hydrophobic environment, while it has minimal fluorescence in aqueous media. It is an excellent vital stain for the detection of intracellular lipid droplets by fluorescence microscopy, in cells such as adipocytes. Flow cytometry methods using a single staining with Nile red and double staining with Nile red and anti-CD3 monoclonal antibody have been employed to monitor peripheral leukocyte and lympho-

Ordering Information

Product code	Unit	Price (USD)
52551	25 mg	75

cyte phospholipidosis. Nile Red has also been used for rapid staining of proteins in SDS-polyacrylamide gel electrophoresis.

References:

1. Halstead et al J Appl Toxicol. 2006 26(2):169-77.
2. Alba et al Biotechniques. 1996 21(4):625-6.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

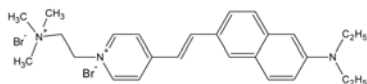
Reactive
Dyes &
Stains

II-3. Cellular Staining: Membrane Potential Detection

Ion
Detection

Di-2-ANEPEQ (JPW1114)

MW:	549.38
Wavelength Maxima:	Excitation 517 nm, Emission 721 nm
Quantity:	5 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52201	5 mg	250

Description:

Di-2-ANEPEQ, also referred to as JPW1114, is a member of the ANEP class of membrane potential dyes. These dyes are weakly fluorescent in aqueous media, and become strongly fluorescent upon binding to lipophilic environments such as membranes. A change in the surrounding electronic field demonstrates a membrane potential-dependent shift in excitation spectra.

The response is sufficiently fast to detect transient (millisecond) potential changes in excitable cells, including single neurons, cardiac cells and intact brains. The dye can be applied directly to brain tissues and is usually introduced into cells via microinjection.

Reference:

1. Vucinić and Sejnowski PLoS ONE. 2007 2(1):e699

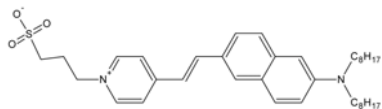
Cellular
Staining

Cell
Viability

Di-8-ANEPPS

Pyridinium, 4-[2-[6-(dioctylamino)-2-naphthalenyl]ethenyl]-1-(3-sulfopropyl)-, inner salt [CAS: 157134-53-7]

MW:	592.88
Wavelength Maxima:	Excitation 498 nm, Emission 713 nm
Quantity:	5 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52204	5 mg	250

Description:

Di-8-ANEPPS is a member of the ANEP class of membrane potential dyes. These dyes are weakly fluorescent in aqueous media, and become strongly fluorescent upon binding to lipophilic environments such as membranes. A change in the surrounding electronic field demonstrates a membrane potential-dependent shift in excitation spectra. Di-8-ANEPPS is less susceptible for cellular internalization than other ANEP dyes probably due to a sulfonate group. The response is

sufficiently fast to detect transient (millisecond) potential changes in excitable cells, including single neurons, cardiac cells and intact brains.

Reference:

1. Wu et al Pflugers Arch. 2008 455(4):687-99.

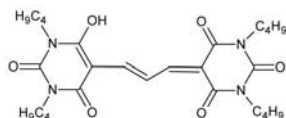
NO/RO
Detection

Reactive
Dyes &
Stains

II-3. Cellular Staining: Membrane Potential Detection

DiBAC4(3) [Bis-(1,3-dibutylbarbituric acid)trimethine oxonol], Ultra Pure

MW:	516.64
Wavelength Maxima:	Excitation 493 nm, Emission 516 nm
Quantity:	25 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52205	25 mg	125

Description:

DiBAC4(3) is a sensitive slow-response probe for measuring cellular membrane potential. In general, slow-response probes exhibit potential-dependent changes in their trans-membrane distribution that are accompanied by a fluorescence change. The magnitude of response is much larger than fast-response probes. Slow-response probes, which include cationic carbocyanines, rhodamines and anionic oxonols, are suitable for detecting changes in average

membrane potentials of nonexcitable cells caused by respiratory activity, ion-channel permeability, drug binding and other factors. DiBAC4(3) has been employed in flow cytometry to monitor antibacterial activity of defensins.

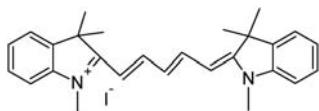
References:

1. Li et al J Mol Neurosci. 2008;35(3):289-95.
2. Nuding et al J Microbiol Methods. 2006;65(2):335-45.

DiIC1(5) iodide [1,1',3,3,3',3'-Hexamethylindodicarbocyanine iodide], Ultra Pure

3H-Indolium, 2-(5-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-1,3-pentadienyl)-1,3,3-trimethyl-, iodide [CAS:36536-22-8]

MW:	510.45
Wavelength Maxima:	Excitation 638 nm, Emission 65 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52207	100 mg	125

Description:

DiI, DiO, DiD and DiR dyes are a family of lipophilic fluorescent stains for labeling membranes and other hydrophobic structures. The fluorescence of these environment-sensitive dyes is greatly enhanced when incorporated into membranes or bound to lipophilic biomolecules such as proteins although they are weakly fluorescent in water. Once applied to cells, these dyes diffuse laterally within the cellular plasma membranes, resulting in even staining of the entire cell at their optimal concentrations. The carbocyanine dye DiIC1(5) has been used to measure mitochondrial membrane potential

in apoptotic cells with a loss in membrane potential reflected in a loss in fluorescence signal in the infrared channel.

References:

1. Mattiasson Cytometry A. 2004 60(2):145-54.
2. Mattiasson et al J Neurochem. 2003 87(2):532-44.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

II-3. Cellular Staining: Membrane Potential Detection

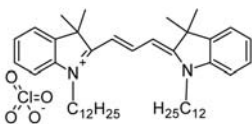
Ion
Detection

DiI12(3) perchlorate [1,1'-Didodecyl-3,3,3',3' tetramethylindocarbocyanine perchlorate], Ultra Pure

3H-Indolium, 1-dodecyl-2- (3-(1-dodecyl-1, 3-dihydro-3, 3-dimethyl-2H-indol-2-ylidene)-1-propenyl)-3, 3-dimethyl-, perchlorate [CAS: 75664-01-6]

MW:	765.55
Wavelength Maxima:	Excitation 549 nm, Emission 565 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient

Cellular
Staining



Ordering Information

Product code	Unit	Price (USD)
52206	100 mg	125

Description:

DiI, DiO, DiD and DiR dyes are a family of lipophilic fluorescent stains for labeling membranes and other hydrophobic structures. The fluorescence of these environment-sensitive dyes is greatly enhanced when incorporated into membranes or bound to lipophilic biomolecules such as proteins although they are weakly fluorescent in water. Once applied to cells, these dyes diffuse laterally within the cellular plasma membranes, resulting in even staining of the entire cell at their optimal concentrations. DiI12(3) is a lipophilic neuronal tracer that is commonly used for labeling neuronal projections as well as lipid bilayers in other cell types, particularly

endothelial cells. DiI12(3) exhibits low toxicity and minimally affects cell viability and is tolerable in culture for several days, making it suitable across a variety of applications.

References:

1. Li et al. Nat Protoc. 2008 3(11):1703-8.
2. Becker et al J Physiol. 2007 15;585(Pt 3):711-9

Cell
Viability

NO/RO
Detection

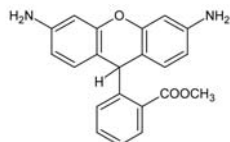
Reactive
Dyes &
Stains

II-4. Cellular Staining: Mitochondrial Detection

Dihydrorhodamine 123, Ultra Pure

Benzoic acid, 2-(3,6-diamino-9H-xantheno-9-yl)-, methyl ester [CAS: 109244-58-8]

MW:	346.38
Wavelength Maxima:	Excitation 507 nm, Emission 529 nm
Quantity:	10 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52302	10 mg	125

Description:

Dihydrorhodamine 123 is a widely utilized probe for detection of intracellular reactive oxygen species (ROS) such as peroxide, hypochlorous acid and peroxynitrite. It is readily oxidized into rhodamine 123, which exhibits a spectral profile similar to that of FITC. In combination with other fluorescent probes (such as surface receptor-targeted fluorescent antibodies, the cell viability probe propidium iodide, or fluores-

cent calcium indicators) this Dihydrorhodamine 123 can be used for multiparametric cell measurements.

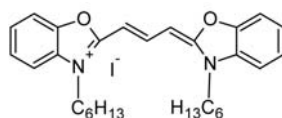
References:

1. Avendaño et al J Immunol Methods. 2008 339(2):124-31.
2. Mauch et al Clin Chem. 2007 3(5):890-6.

DiOC6(3) iodide [3,3'-Dihexyloxycarbocyanine iodide], Ultra Pure

Benzoxazolium, 3-hexyl-2-(3-(3-hexyl-2(3H)-benzoxazolylidene)-1-propenyl) -, iodide [CAS: 53213-82-4]

MW:	572.52
Wavelength Maxima:	Excitation 482 nm, Emission 504 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52303	100 mg	75

Description:

DiI, DiO, DiD and DiR dyes are a family of lipophilic fluorescent stains for labeling membranes and other hydrophobic structures. The fluorescence of these environment-sensitive dyes is greatly enhanced when incorporated into membranes or bound to lipophilic biomolecules such as proteins although they are weakly fluorescent in water. Once applied to cells, these dyes diffuse laterally within the cellular plasma membranes, resulting in even staining of the entire cell at their optimal concentrations. DiOC6(3) is a green fluorescent membrane dye that has been used to detect mitochondrial membrane potential in live cells. The probe has also been

employed in the analysis of apoptotic pathways by multiparametric flow cytometry. The dye has also been employed with the microfluidic Agilent 2100 bioanalyzer for assessing mitochondrial membrane potential.

References:

1. Lecoeur H, Melki MT, Saïdi H, Gougeon ML. Methods Enzymol. 2008 442:51-82.
2. Kataoka et al Electrophoresis. 2005 26(15):3025-31.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

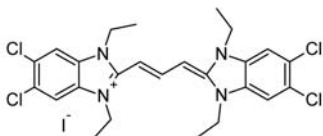
Reactive
Dyes &
Stains

II-4. Cellular Staining: Mitochondrial Detection

Ion
Detection

JC-1 [5,5',6,6'-Tetrachloro-1,1',3,3'-tetraethylbenzimidazolyl-carbocyanine iodide], Ultra Pure

MW:	652.23
Wavelength Maxima:	Excitation 515 nm, Emission 529 nm
Quantity:	5 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52304	5 mg	150

Description:

JC-1 is widely used for determining mitochondrial membrane potential by flow cytometry, fluorescence microscopy and in microplate-based fluorescent assays. JC-1 accumulates in mitochondria, selectively generating an orange J-aggregate emission profile (590 nm) in healthy cells. However, upon cell injury, as membrane potential decreases, JC-1 monomers are generated, resulting in a shift to green emission (529 nm). The principal advantage of JC-1 relative to other commonly

employed fluorescent probes of mitochondrial membrane potential is that it allows for both qualitative visualization, considering the shift from orange to green fluorescence emission, and quantitative detection, considering the fluorescence intensity ratio.

Reference:

1. Reers et al Methods Enzymol. 1995 260:406-17.

Cellular
Staining

Cell
Viability

JC-10 [Enhanced JC-1], Ultra Pure

MW:	~600
Wavelength Maxima:	Excitation 510 nm, Emission 525 nm
Quantity:	5 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient

Ordering Information

Product code	Unit	Price (USD)
52305	5 mg	175

Description:

JC-10 is a derivative of JC-1 useful for determining mitochondrial membrane potential by flow cytometry, fluorescence microscopy and in microplate-based fluorescent assays. JC-10 accumulates in mitochondria, selectively generating an orange J-aggregate emission profile (590 nm) in healthy cells. However, upon cell injury, as membrane potential decreases, JC-10 monomers are generated, resulting in a shift to green emission (525 nm). The principal advantages of JC-10

relative to JC-1 include improved solubility in aqueous media and an ability to detect subtler changes in mitochondrial membrane potential loss. JC-10 allows for both qualitative visualization, considering the shift from orange to green fluorescence emission, and quantitative detection, considering the fluorescence intensity ratio, of mitochondrial membrane potential changes.

NO/RO
Detection

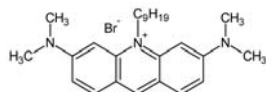
Reactive
Dyes &
Stains

II-4. Cellular Staining: Mitochondrial Detection

NAO [Nonyl acridine orange], Ultra Pure

Acridinium, 3,6-bis(dimethylamino)-10-nonyl-, bromide [CAS: 75168-11-5]

MW:	472.5
Wavelength Maxima:	Excitation 495 nm, Emission 519 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52306	25 mg	125

Description:

10-N-Nonyl acridine orange (NAO) is an acridine orange derivative and is generally used as a fluorescent marker of the inner mitochondrial membrane in whole cells. It is believed to bind to negatively charged phospholipids. NAO accumulation in the cell seems to be related to specific interactions with mitochondrial membrane proteins and/or lipids, such as cardiolipin, and is largely independent of mitochondrial membrane potential. With respect to apoptosis,

the presence of mitochondrial membrane potential can be probed with Rhodamine123 while the structure and integrity of mitochondria can be assessed using 10-N-nonyl-acridine orange.

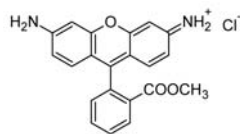
References:

1. Fu et al PLoS ONE. 2008 3(4):e2009.
2. Ferlini and Scambia Nat Protoc. 2007 2(12):3111-4.

Rhodamine 123, Ultra Pure

Xanthylium, 3,6-diamino-9-(2-(methoxycarbonyl)phenyl), chloride [CAS: 62669-70-9]

MW:	380.82
Wavelength Maxima:	Excitation 507 nm, Emission 529 nm
Quantity:	2 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Rhodamine 123 is a cell-permeant, cationic, green-fluorescent dye that is readily sequestered by active mitochondria without cytotoxic effects. Rhodamine 123 can be used in multi-parametric analysis, without fluorescence interference, in combination with common protein labeling dyes such as Cyanine-5 and AMCA. With respect to apoptosis, the presence of mitochondrial membrane potential can be probed with Rhodamine123 while the structure and

integrity of mitochondria can be assessed using 10-N-nonyl-acridine orange.

References:

1. Ferlini and Scambia Nat Protoc. 2007 2(12):3111-4.
2. Kahlert et al J Neurosci Methods. 2008 171(1):87-92.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

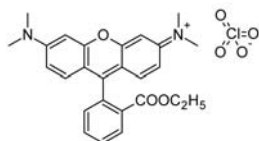
II-4. Cellular Staining: Mitochondrial Detection

Ion
Detection

TMRE [Tetramethylrhodamine ethyl ester, perchlorate], Ultra Pure

Xanthylium, 3,6-bis(dimethylamino)-9-[2-(ethoxycarbonyl)phenyl]-, perchlorate [CAS: 115532-52-0]

MW:	514.95
Wavelength Maxima:	Excitation 549 nm, Emission 574 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Positively charged rhodamine dyes (such as rhodamine esters and rosamines) are selectively localized in mitochondria, thus they are widely used for labeling mitochondria of live cells. Like JC-1, TMRE is widely used for measuring mitochondrial membrane potential, in addition to selectively staining mitochondria. Real-time imaging of mitochondrial membrane potential in individual cardiomyocytes within

Ordering Information

Product code	Unit	Price (USD)
52309	25 mg	125

perfused rat hearts has been demonstrated with this dye, using 2-photon laser-scanning microscopy

References:

1. Chalmers and McCarron J Cell Sci. 2008 121(Pt 1):75-85.
2. Matsumoto-Ida et al Circulation. 2006 114(14):1497-503.

Cellular
Staining

Cell
Viability

NO/RO
Detection

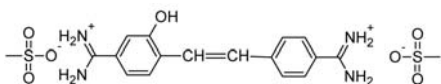
Reactive
Dyes &
Stains

II-5. Cellular Staining: Neuronal Detection

Hydroxystilbamidine, Ultra Pure, (Fluoro-Gold™ alternative)

4-[(E)-2-(4-carbamimidoylphenyl)ethenyl]-3-hydroxybenzenecarboximidamide

MW:	472.53
Wavelength Maxima:	Excitation 385 nm, Emission 536 nm
Quantity:	10 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52253	10 mg	125

Description:

Hydroxystilbamidine is a cationic dye, equivalent to Fluoro-Gold™, which is frequently used as a retrograde neuronal tracer. The fluorescent tracer provides intense retrograde labeling that is extremely sensitive and reliable, does not diffuse out of retrograde-labeled neurons, and can be pressure-injected or introduced by iontophoresis into cells. Hydroxystilbamidine is compatible with most frequently used neuroanatomical techniques such as immunofluorescence,

immunocytochemistry, autoradiography, and horseradish peroxidase-based histochemistry, paraffin embedding.

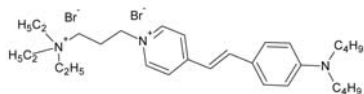
References:

1. Kelly et al J Comp Neurol. 2009;512(4):573-93.
2. Catapano et al Methods Mol Biol. 2008;438:353-9.

MM 1-43 (FM® 1-43 alternative)

N-(3-Triethylammoniumpropyl)-4-(4-(dibutylamino)styryl)pyridinium dibromide

MW:	611.54
Wavelength Maxima:	Excitation 510 nm, Emission 626 nm
Quantity:	1 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52251	1 mg	225

Description:

MM 1-43 is a cationic dye, equivalent to membrane probe FM® 1-43. MM 1-43 is believed to insert into the outer leaflet of the cell membrane where it becomes intensely fluorescent. In a neuron that is actively releasing neurotransmitters, the dye becomes internalized within the recycled synaptic vesicles and the nerve terminals become brightly stained. The staining of cell-surface specific membranes is useful for identifying actively firing neurons and for investigating the mechanisms of activity-dependent vesicle cycling.

References:

1. Williams et al Nat Protoc. 2008 3(5):835-9.
2. Verstreken et al Methods Mol Biol. 2008 440:349-69.

* Fluoro-Gold is a trademark of Fluorochrome, LLC. FM is a registered trademark of Life Technologies.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

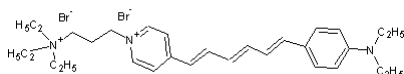
II-5. Cellular Staining: Neuronal Detection

Ion
Detection

MM 4-64 (FM[®] 4-64 alternative)

N-(3-Triethylammoniumpropyl)-4-(6-(4-(diethylamino)phenyl)hexatrienyl)pyridinium dibromide

MW: 607.51
Wavelength Maxima: Excitation 558 nm, Emission 734 nm
Quantity: 1 mg
Purity: >90% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Cellular
Staining

Ordering Information

Product code	Unit	Price (USD)
52252	1 mg	225

Description:

MM 4-64 is a cationic dye, equivalent to membrane probe FM[®] 4-64. MM 4-64 is a lipophilic styryl dye that is used as a vital stain to follow bulk membrane-internalization and transport to the vacuole in yeast. MM 4-64 is also a sensitive reporter of vacuolar dynamics, detecting such events as segregation structure formation during mitosis, vacuole fission/fusion events, and vacuolar morphology in different classes of vacuolar protein sorting mutants.

References:

1. Gitler et al J Neurosci. 2008 28(43):10835-43.
2. Brigadski et al J Neurosci. 2005 25(33):7601-14.

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

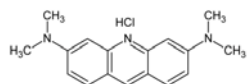
* FM is a registered trademark of Life Technologies.

II-6. Cellular Staining: Nuclear Detection

Acridine Orange, Ultra Pure

3,6-Acridinediamine, N,N,N',N'-tetramethyl-, monohydrochloride [CAS: 65-61-2]

MW:	301.82
Wavelength Maxima:	Excitation 500 nm, Emission 526 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52405	100 mg	125

Description:

Acridine orange is a nucleic acid selective fluorescent cationic dye useful for cell cycle determination. It is cell-permeable, and interacts with DNA and RNA by intercalation or electrostatic attractions. When bound to DNA, it is very similar spectrally to fluorescein, with an excitation maximum at 502 nm and an emission maximum at 525 nm (green). When it associates with RNA, the excitation maximum shifts to 460 nm (blue) and the emission maximum shifts to 650 nm (red).

Acridine Orange is also commonly used to non-specifically stain acidic organelles, such as lysosomes. The dye is often used in epifluorescence microscopy.

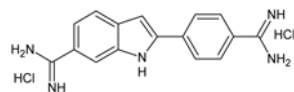
References:

1. Gonzalez et al *Curr Eye Res.* 1995 14(4):269-73.
2. Traganos and Darzynkiewicz *Methods Cell Biol.* 1994 41:185-94.

DAPI [4',6-Diamidino-2-phenylindole, dihydrochloride], Ultra Pure

1H-Indole-6-carboximidamide, 2-[4-(aminoiminomethyl)phenyl]-,dihydrochloride [CAS: 28718-90-3]

MW:	350.25
Wavelength Maxima:	Excitation 358 nm, Emission 461 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52404	100 mg	450

Description:

DAPI is a fluorescent dye that binds nucleic acids and demonstrates a high affinity for DNA. It is used extensively in fluorescence microscopy, flow cytometry and microplate assays. DAPI is cell permeable and is readily used for detecting both live, dead and fixed cells. DAPI emits in the blue spectral range and is ideal for multiplexed assays inclusive of green-fluorescent molecules like fluorescein and green fluorescent protein (GFP), or red-fluorescent stains like Texas

Red. Aside from labeling cell nuclei, DAPI is also used for the detection of mycoplasma or viral DNA in cell cultures.

References:

1. Suda and Trávníček *Cytometry A.* 2006 69(4):273-80.
2. Krishan and Dandekar *J Histochem Cytochem.* 2005 53(8):1033-6.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

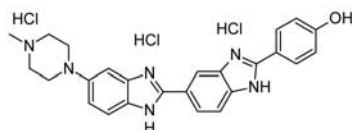
II-6. Cellular Staining: Nuclear Detection

Ion
Detection

Hoechst 33258, Ultra Pure

Phenol, 4-[5-(4-methyl-1-piperazinyl)[2,5'-bi-1H-benzimidazol]-2'-yl]-, trihydrochloride [CAS: 23491-45-4]

MW: 533.88
Wavelength Maxima: Excitation 352 nm, Emission 461 nm
Quantity: 100 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Ordering Information

Product code	Unit	Price (USD)
52402	100 mg	100

Description:

Hoechst 33258 is fluorescent probe useful for detecting DNA by fluorescence microscopy and flow cytometry. Hoechst 33258 may be used on live or fixed cells and is also applicable for cell cycle analysis and monitoring DNA condensation by flow cytometry. Hoechst 33358 is less cell permeable than other derivatives, however this dye also allows for quantitative measurements when plotted in a standard emission-to-content curve.

References:

1. Saito et al J Biochem. 2004 136(6):813-23.
2. Poot et al Methods Cell Biol. 1990 33:185-98.

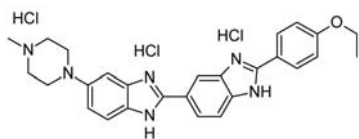
Cellular
Staining

Cell
Viability

Hoechst 33342, Ultra Pure

2,5'-Bi-1H-benzimidazole, 2'-(4-ethoxyphenyl)-5-(4-methyl-1-piperazinyl)- [CAS: 23491-52-3]

MW: 561.93
Wavelength Maxima: Excitation 350 nm, Emission 461 nm
Quantity: 100 mg
Purity: >95% by HPLC
Storage: -20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition: Ambient



Ordering Information

Product code	Unit	Price (USD)
52401	100 mg	100

Description:

Hoechst 33342 is fluorescent probe useful for detecting DNA by fluorescence microscopy and flow cytometry. Hoechst 33342 may be used on live or fixed cells and is also applicable for cell cycle analysis and monitoring DNA condensation by flow cytometry. An additional ethyl group renders Hoechst 33342 more lipophilic, and thus more readily cell permeable than Hoechst 33258. Exclusion of Hoechst 33342 dye is a

characteristic common to stem cells, as well as chemotherapy-resistant cancer cells.

References:

1. Seigel and Campbell Cytotechnology 2004 45(3):155-60.
2. Schmid et al Nat Protoc. 2007 2(1):187-90.

NO/RO
Detection

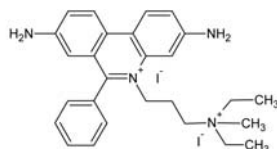
Reactive
Dyes &
Stains

II-6. Cellular Staining: Nuclear Detection

Propidium Iodide, Ultra Pure

Phenanthridinium, 3,8-diamino-5-[3-(diethylmethylammonio)propyl]-6-phenyl-, diiodide [CAS: 25535-16-4]

MW:	668.39
Wavelength Maxima:	Excitation 535 nm, Emission 617 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52403	100 mg	125

Description:

Propidium iodide (PI) belongs to the same chemical class as ethidium bromide. As with ethidium bromide, its fluorescence is enhanced 20-30-fold upon binding to nucleic acids. The fluorescence excitation maximum is red-shifted 30-40 nm and the fluorescence emission maximum blue-shifted ~15 nm. PI also binds to RNA as does DAPI and acridine orange. PI is membrane impermeant and is commonly used for identifying dead cells in a mixed population of cells and as a counter-

stain in multicolor fluorescent techniques. It can also be used to differentiate necrotic, apoptotic and viable cells. The dye is suitable for fluorescence microscopy, flow cytometry and fluorometry applications.

Reference:

1. Edwards et al Curr Protoc Cytom. 2007 Chapter 9:Unit 9.24.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

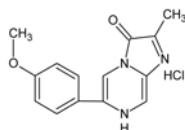
III-1. Cell Viability: Live/Dead Cellular Staining

Ion
Detection

Coelenterazine, Ultra Pure

Imidazo[1,2-a]pyrazin-3,(7H)-one, 6-(4-hydroxyphenyl)-2-[(4-hydroxyphenyl) methyl]-8-(phenylmethyl)- [CAS: 55779-48-1]

MW:	423.46
Wavelength Maxima:	Excitation 429 nm, Emission 466 nm
Quantity:	250 µg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Cellular
Staining

Ordering Information

Product code	Unit	Price (USD)
52054	250 µg	275

Description:

Coelenterazine is useful for monitoring calcium in live cells and tissues, in reporter gene assays, for superoxide anion detection and in drug high-throughput screening applications. Coelenterazine is useful for reconstituting aequorin in cells that have been transfected with apo-aequorin cDNA. The aequorin complex comprises a 22 kD apo-aequorin protein, molecular oxygen and coelenterazine. In the presence of Ca(II), coelenterazine is oxidized to coelenteramide, yielding the release of carbon dioxide and blue light. Unlike fluorescent Ca(II) indicators, Ca²⁺-bound aequorin can be

detected without illuminating the sample, thereby eliminating interference from autofluorescence.

References:

1. Pichler et al Proc Natl Acad Sci U S A. 2004 101(6): 1702-7.
2. Zhao et al Mol Imaging. 2004 3(1):43-54.

Cell
Viability

NO/RO
Detection

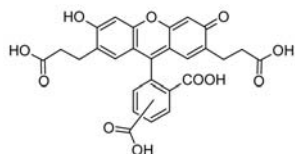
Reactive
Dyes &
Stains

III-1. Cell Viability: pH Indicators

BCECF acid [2',7'-Bis-(2-carboxyethyl)-5-(and-6)-carboxyfluorescein], Ultra Pure

Spiro(isobenzofuran-1(3H),9'(9H)xanthene)-2',7'-dipropanoic acid, arcarboxy-3',6'-dihydroxy-3-oxo- [CAS: 85138-49-4]

MW:	520.45
Wavelength Maxima:	Excitation 503 nm, Emission 520 nm
Quantity:	1 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

BCECF (2',7'-Bis-(2-carboxyethyl)-5-(and-6)-carboxyfluorescein) is a well established cell impermeable, fluorescent probe that enables ratiometric monitoring of cellular pH (pKa 7.0) and can be loaded in cells by microinjection, electroporation or scrape loading. The AM ester form of the dye should be used for passive loading. Intracellular pH plays an important role in modulating cellular events, including growth, calcium regulation, enzymatic activity, receptor-mediated

Ordering Information

Product code	Unit	Price (USD)
52101	1 mg	175

signal transduction, ion transport, endocytosis, chemotaxis, adhesion and other cellular processes.

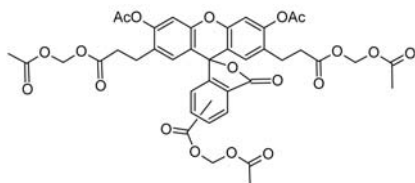
References:

1. Boens et al J Phys Chem A. 2006 Aug 3 110(30):9334-43.
2. Alvarez-Leefmans et al Biophys J. 2006 90(2):608-18.

BCECF AM [2',7'-Bis-(2-carboxyethyl)-5-(and-6)-carboxyfluorescein, acetoxymethyl ester], Ultra Pure

Spiro(isobenzofuran-1(3H),9'(9H)xanthene)-2',7'-dipropanoic acid,3',6'-bis(acetyloxy)-5(or 6)-[[[acetyloxy)methoxy]carbonyl]-3-oxo-, bis[[acetyloxy)methyl] ester [CAS: 117464-70-7]

MW:	808.69
Wavelength Maxima:	Excitation 505 nm, Emission 520 nm
Quantity:	1 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

BCECF AM (2',7'-Bis-(2-carboxyethyl)-5-(and-6)-carboxyfluorescein acetoxymethyl ester) is a well established fluorescent probe that enables ratiometric monitoring of cellular pH. Intracellular pH plays an important role in modulating cellular events, including growth, calcium regulation, enzymatic activity, receptor-mediated signal transduction, ion transport, endocytosis, chemotaxis, adhesion and other cellular processes. Once inside, cellular esterases cleave the AM

Ordering Information

Product code	Unit	Price (USD)
52102	1 mg	175

groups yielding a more hydrophilic BCECF trapped inside the cell.

References:

1. Boens et al J Phys Chem A. 2006 Aug 3;110(30):9334-43.
2. Alvarez-Leefmans et al Biophys J. 2006 ;90(2):608-18.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

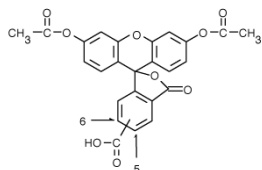
III-2. Cell Viability: pH Indicators

Ion
Detection

CFDA [5-(and-6)Carboxyfluorescein diacetate], Ultra Pure

Spiro(isobenzofuran-1(3H),9'(9H)xanthene)-ar-carboxylic acid, 3',6'-bis(acetyloxy)-3-oxo- [CAS: 124387-19-5]

MW:	460.39
Wavelength Maxima:	Excitation 494 nm, Emission 521 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52104	100 mg	75

Description:

CFDA is an amine-reactive fluorescein diacetate (FDA) derivative used to prepare a variety of FDA conjugates. FDA and its derivatives are non-fluorescent molecules that diffuse into cells and are hydrolyzed by intracellular non-specific esterases, yielding fluorescent probes. These probes accumulate exclusively in cells with intact cell membranes. CFDA does not stain dead cells. FDA labeling can be used for monitoring cells by flow cytometry or fluorescence microscopy.

The probe is also frequently used to monitor reactive oxygen species (ROS) generation in live cells.

References:

1. Quah et al. Nat Protoc. 2007 2(9):2049-56.
2. Fujioka et al Cell Transplant. 1994 3(5):397-408.

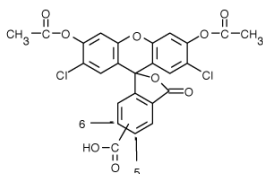
Cellular
Staining

Cell
Viability

CDCFDA [5-(and-6)-carboxy-2',7'-dichlorofluorescein diacetate], Ultra Pure

Spiro[isobenzofuran-1(3H),9'(9H)xanthene)-ar-carboxylic acid, 3',6'-bis(acetyloxy)-2',7'-dichloro-3-oxo- [CAS: 127770-45-0]

MW:	529.28
Wavelength Maxima:	Excitation 504 nm, Emission 529 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52103	100 mg	75

Description:

CDCFDA is an amine-reactive fluorescein diacetate (FDA) derivative used to prepare a variety of FDA conjugates. CDCFDA is a non-fluorescent molecule that diffuse into cells and is hydrolyzed by intracellular non-specific esterases, yielding a fluorescent probe. The probe accumulates exclusively in cells with intact cell membranes. CFCFDA does not stain dead cells. CDCFDA labeling can be used for monitoring cells by flow cytometry or fluorescence micros-

copy. The probe is also frequently used to monitor reactive oxygen species (ROS) generation in live cells.

References:

1. Li et al Free Radic Res. 2008 42(4):354-61.
2. Medhora et al Am J Physiol Lung Cell Mol Physiol. 2008 294(5):L902-11.

NO/RO
Detection

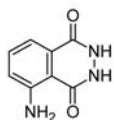
Reactive
Dyes &
Stains

IV-1. Reactive Oxygen Detection

Luminol [3-Aminophthalhydrazide], Ultra Pure

(S)-2-(6-Hydroxy-2-benzothiazolyl)-2-thiazoline-4-carboxylic acid [CAS: 2951-17-5]

MW:	177.16
Wavelength Maxima:	Excitation 355 nm, Emission 411 nm
Quantity:	1 g
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Ordering Information

Product code	Unit	Price (USD)
52354	1 g	75

Description:

Luminol is a luminescent peroxidase substrate that can be used as a chemiluminescent reagent for the determination of viable mammalian cells and bacteria. Luminol also has forensic application as a presumptive test for latent blood detection and is commonly employed in detection strategies by flow injection analysis, for pharmaceutical and environmental characterization. Chemiluminescent and electro-

chemiluminescent probes based upon luminol are beginning to merge with biochip and microarray development as a possible substitutes for the more well-established fluorescent probes.

Reference:

1. Marquette and Blum Anal Bioanal Chem. 2006 38 (3):546-54.

CELLestial™ Red Hydrogen Peroxide Assay Kit

Specifications:

Minimum of 10 picomoles of H₂O₂ detected

Fluorescence-based H₂O₂ specific signal (Excitation 570 nm, Emission 585 nm)

Absorbance-based H₂O₂ specific signal (OD₅₇₆)

Storage: Store kit at -20°C in a non-frost free freezer

Shipping Condition: Dry ice (-70°C)

Ordering Information

Product code	Unit	Price (USD)
51004	1 kit	225

Description:

The Cellestial™ Red Hydrogen Peroxide Assay Kit provides a simple absorbance-based or fluorometric assay to detect and quantify hydrogen peroxide or peroxidase activity in biochemical assays, cell extracts and in live cells. It can also be used to detect a variety of oxidase activities through enzyme-coupled reactions. The kit is an optimized 'mix and read' assay that is suitable for both 96 and 384-well formats and is compatible with HTS liquid handling.

Components:

- 1 vial, CELLestial™ Red Peroxidase Substrate
- 20 units, Horseradish Peroxidase
- 200 µL, H₂O₂ Stock Solution
- 1 mL, DMSO
- 100 mL, Assay Buffer

* CELLestial is a trademark of Enzo Life Sciences.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

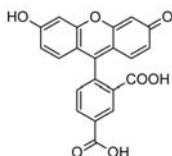
V-1. Reactive Dyes and Stains: Amine-Reactive

Ion
Detection

5-Carboxyfluorescein, Ultra Pure

Spiro(isobenzofuran-1(3H),9'-(9H)xanthen)-5-carboxylic acid, 3',6'-dihydroxy-3-oxo- [CAS: 76823-03-5]

MW:	376.32
Wavelength Maxima:	Excitation 492 nm, Emission 518 nm
Quantity:	100 mg
Purity:	>98% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

5-FAM is the purified single isomer of 5,6-carboxyfluorescein and is used for labeling peptides, proteins and nucleotides through the interaction of carboxylic acid with primary amines. It has been principally used to develop a variety of green fluorescent reagents and small fluorescent molecules due to its relatively high absorbance characteristics, excellent fluorescence quantum yield, and good water solubility. The probe has also found application in studies of liposome-cell,

Ordering Information

Product code	Unit	Price (USD)
52051	100 mg	75

cell-cell, and liposome-liposome interactions and in related studies on lipid bilayer structures.

References:

1. David et al Biol Chem. 2003 384(12):1619-30.
2. Fischer et al Bioconjug Chem. 2003 14(3):653-60.

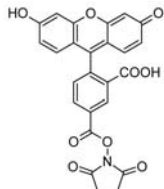
Cellular
Staining

Cell
Viability

5-Carboxyfluorescein succinimidyl ester, Ultra Pure

2,5-Pyrrolidinedione, 1-[[[(3',6'-dihydroxy-3-oxospiro[isobenzofuran-1(3H), 9'-(9H)xanthen]-5-yl)carbonyl]oxy]- [CAS: 92557-80-7]

MW:	473.39
Wavelength Maxima:	Excitation 492 nm, Emission 518 nm
Quantity:	10 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

5-Carboxyfluorescein succinimidyl ester is an amine-reactive ester of single isomer 5-Carboxyfluorescein. It has principally been used to develop a variety of green fluorescent reagents and small fluorescent molecules due to its relatively high absorbance characteristics, excellent fluorescence quantum yield, and good water solubility. Carboxyfluorescein succinimidyl ester has recently become a popular probe for labeling cells intracellularly and tracking their mitotic activity

Ordering Information

Product code	Unit	Price (USD)
52053	10 mg	150

by flow cytometry and other fluorescence-based assays thru monitoring progressive two-fold reductions in fluorescence intensity.

References:

1. Fulcher and Wong Immunol Cell Biol. 1999 77(6):559-64.
2. Lin et al Transplantation. 2008 86(10):1452-62
3. Alpdogan et al Blood. 2008 112(12):4755-64.

NO/RO
Detection

Reactive
Dyes &
Stains

V-1. Reactive Dyes and Stains: Amine-Reactive

Cyanine 3-NHS Ester Pack

Wavelength Maxima:	Excitation 553 nm, Emission 570 nm
Extinction Coefficient:	145,000 M ⁻¹ cm ⁻¹ (553 nm)
Quantity:	12 x 50 nmoles
Storage:	4°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Cold Pack

Ordering Information

Product code	Unit	Price (USD)
42541	1 pack	125

Description:

Cyanine 3-NHS ester is a reactive, water-soluble fluorescent dye that provides bright orange signal. The dye can be chemically linked to either nucleic acids or proteins and is suitable for a wide variety of applications including microarray analysis and protein tagging. In microarray experiments, DNA or RNA samples are labeled with the cyanine 3 and cyanine 5 dyes for differential display analysis. Since NHS esters react only with aliphatic amine groups, which nucleic acids lack, nucleotides must be modified first with aminoallyl

groups thru incorporating aminoallyl-modified nucleotides during synthesis. Alternatively, labeling can be performed directly by nick translation using cyanine dUTPs (Gold 550 dUTP, Cat. No. 42521, and Red 648 dUTP, Cat. No. 42844). For protein labeling, it is critical to control the number of dye molecules affixed per protein to maintain maximal activity. For example, no more than 8 dye molecules should be bound per antibody molecule, while annexin V will only tolerate 1-2 dye molecules per protein without loss of activity.

Cyanine 5-NHS Ester Pack

Wavelength Maxima:	Excitation 650 nm, Emission 664 nm
Extinction Coefficient:	250,000 M ⁻¹ cm ⁻¹ (650 nm)
Quantity:	12 x 50 nmoles
Storage:	4°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Cold Pack

Ordering Information

Product code	Unit	Price (USD)
42542	1 pack	125

Description:

Cyanine 5-NHS ester is a reactive, water-soluble fluorescent dye that provides bright red signal. The dye can be chemically linked to either nucleic acids or proteins and is suitable for a wide variety of applications including microarray analysis and protein tagging. In microarray experiments, DNA or RNA samples are labeled with the cyanine 3 and cyanine 5 dyes for differential display analysis. Since NHS esters react only with aliphatic amine groups, which nucleic acids lack, nucleotides must be modified first with aminoallyl

groups thru incorporating aminoallyl-modified nucleotides during synthesis. Alternatively, labeling can be performed directly by nick translation using cyanine dUTPs (Gold 550 dUTP, Cat. No. 42521, and Red 648 dUTP, Cat. No. 42844). For protein labeling, it is critical to control the number of dye molecules affixed per protein to maintain maximal activity. For example, no more than 8 dye molecules should be bound per antibody molecule, while annexin V will only tolerate 1-2 dye molecules per protein without loss of activity.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

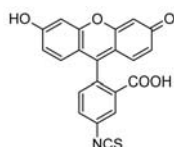
V-1. Reactive Dyes and Stains: Amine-Reactive

Ion
Detection

5-FITC, Ultra Pure

Spiro(isobenzofuran-1(3H),9'-(9H) xanthen)-3-one, 3',6' dihydroxy-5-isothiocyanato- [CAS: 3326-32-7]

MW:	389.38
Wavelength Maxima:	Excitation 494 nm, Emission 520 nm
Quantity:	1 g
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Fluorescein isothiocyanate (FITC) is an amine-reactive fluorescein derivative that yields conjugates with superior stability. Dye synthesis generally results in two isomers that differ slightly in protein binding and may elute differently under chromatographic conditions, complicating analysis in certain situations. The 5-isomer of FITC is the most widely used isoform and has a multitude of applications beyond protein peptide and nucleotide labeling. For example, it is

Ordering Information

Product code	Unit	Price (USD)
52451	1 g	175

commonly employed as a donor for FRET (Fluorescence Resonance Energy Transfer) based assay systems. An acceptor molecule, such as TRITC, is recommended in such FRET applications.

References:

1. Heidecker et al *Biochemistry*. 1995 34(35):11017-25.
2. Kim et al *Chem Commun (Camb)*. 2007 (13):1346-8.

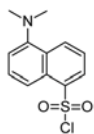
Cellular
Staining

Cell
Viability

Dansyl chloride, Ultra Pure

1-Naphthalenesulfonyl chloride, 5-dimethylamino- [CAS: 605-65-2]

MW:	269.75
Wavelength Maxima:	Excitation 372 nm
Quantity:	100 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Dansyl chloride demonstrates amine-specific fluorescence (557 nm emission), enabling environmentally sensitive detection in biophysical studies. Dansyl chloride reacts with both aliphatic and aromatic primary amines to produce a stable blue-green fluorescent sulfonamide adduct. In general, the probe serves as a good acceptor for fluorescence resonance energy transfer (FRET) when tryptophan is used as the donor. Alternatively, the dansyl moiety can serve as the

Ordering Information

Product code	Unit	Price (USD)
52455	100 mg	75

donor and polydiacetylene as the acceptor in liposome studies. The probe is particularly useful for preparing fluorescent drug or ligand analogs that bind to hydrophobic sites in proteins, membranes or other biological receptors.

References:

1. White et al. *Analyst*. 2008 133(1):65-70.
2. Li et al. *Langmuir*. 2006 22(21):8615-7.

NO/RO
Detection

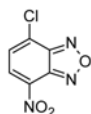
Reactive
Dyes &
Stains

V-1. Reactive Dyes and Stains: Amine-Reactive

NBD-Cl [4-Chloro-7-nitrobenzofurazan], Ultra Pure

2,1,3-Benzoxadiazole, 4-chloro-7-nitro- [CAS: 10199-89-0]

MW:	199.55
Wavelength Maxima:	Excitation 337 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

NBD-Cl is widely used to label peptides, proteins, drugs and other biomolecules. NBD-Cl is non-fluorescent, and generates green fluorescent adducts (emission maximum of 512 nm) upon reacting with aliphatic amines or thiol compounds. It reacts with amino groups such as aliphatic amines, amino acids, peptides, and proteins to form highly fluorescent compounds. The reagent has been used in a variety of spectrophotometric, spectrofluorometric and HPLC assays of

Ordering Information

Product code	Unit	Price (USD)
52456	25 mg	75

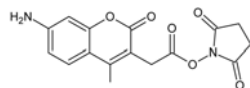
pharmaceutically important analytes.

References:

1. Ulu Spectrochim Acta A Mol Biomol Spectrosc. 2009 72(1):138-43.
2. El-Enany et al Chem Pharm Bull (Tokyo). 2007 55(12):1662-70.

AMCA-NHS [Aminomethylcoumarin acetate succinimidyl ester], Ultra Pure

MW:	330.29
Wavelength Maxima:	Excitation 353 nm, Emission 442 nm
Quantity:	10 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

AMCA is a blue fluorescent dye whose reactive derivatives are commonly used as contrasting probes for double and triple labeling in immunofluorescence microscopy, microarrays and *in situ* hybridization. Desirable properties of AMCA include a relatively large Stoke's shift and resistance to photobleaching. AMCA-NHS is reactive towards primary amine groups on proteins, peptides and other biomolecules.

Ordering Information

Product code	Unit	Price (USD)
52454	10 mg	75

References:

1. Ulfhake et al J Neurosci Methods. 1991 40(1):39-48.
2. Wessendorf et al. J Histochem Cytochem. 1990 38(1): 87-94.

Ion
Detection

Cellular
Staining

Cell
Viability

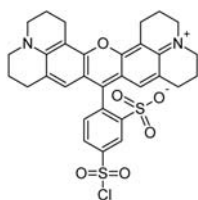
NO/RO
Detection

Reactive
Dyes &
Stains

V-1. Reactive Dyes and Stains: Amine-Reactive

Sulforhodamine 101 sulfonyl chloride (Texas Red[®] alternative)

MW:	625.16
Wavelength Maxima:	Excitation 589 nm, Emission 615 nm
Quantity:	10 mg
Purity:	>90% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Sulforhodamine 101 acid chloride is a fluorescent probe commonly used in histology for staining cell specimens, for sorting cells with fluorescent-activated cell sorting machines, in fluorescence microscopy applications, and in immunohistochemistry applications. This reagent reacts with amine compounds on amino acids, peptides and proteins to give

Ordering Information

Product code	Unit	Price (USD)
52453	10 mg	125

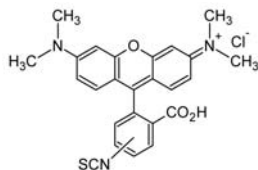
bright red fluorescent conjugates that are extremely stable, and resistant to protease-catalyzed hydrolysis.

References:

1. Smith et al *Curr Protoc Cytom.* 2004, Chapter 7:Unit 7.25.
2. Ahmad and Ghasemi *Anal Bioanal Chem.* 2007;387 (8):2737-43.

5(6)-TRITC [Tetramethylrhodamine-5-(and-6)-isothiocyanate], Ultra Pure

MW:	479.98
Wavelength Maxima:	Excitation 543 nm, Emission 571 nm
Quantity:	10 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

5(6)-TRITC is an amino-reactive labeling reagent that is widely used in preparing bioconjugates of proteins and nucleic acids. The resultant conjugates have similar spectral properties to those prepared from 5(6)-TAMRA, SE with improved stability. TRITC is widely used and has a multitude of applications beyond protein, peptide and nucleotide labeling. For example, it can serve as an acceptor for FRET (Fluorescence Resonance Energy Transfer) based detection

Ordering Information

Product code	Unit	Price (USD)
52452	10 mg	175

systems. FITC is recommended as a donor molecule in these FRET-based applications.

References:

1. Heidecker et al *Biochemistry.* 1995 34(35):11017-25.
2. Kim et al *Chem Commun (Camb).* 2007 (13):1346-8.

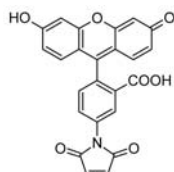
* Texas Red is a registered trademark of Life Technologies.

V-2. Reactive Dyes and Stains: Thiol-Reactive

Fluorescein-5-maleimide, Ultra Pure

1H-Pyrrole-2,5-dione, 1-(3',6'-dihydroxy-3-oxospiro(isobenzofuran-1(3H),9'-(9H)xanthen-5-yl))- [CAS: 75350-46-8]

MW:	427.36
Wavelength Maxima:	Excitation 493 nm, Emission 515 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Fluorescein-5-maleimide enables protein labeling via thiol modifications in most proteins at cysteine residues that either are intrinsically present or resulted from reduction of cystine residues. Unlike iodoacetamides, maleimides do not react with histidine and methionine under physiological conditions. The probe is suitable for assessing conformation-dependent accessibility of cysteine residues in proteins.

Ordering Information

Product code	Unit	Price (USD)
52502	25 mg	225

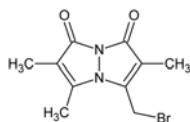
References:

1. Giangregorio et al *Biochim Biophys Acta*. 2007 1767(11):1331-9.
2. Dastidar et al *J Bacteriol*. 2007 189(15):5550-8.

Monobromobimane (mBBr), Ultra Pure

1H,7H-Pyrazolo(1,2- α) pyrazole-1,7- dione, 3-(bromomethyl)-2,5,6-trimethyl- [CAS: 71418-44-5]

MW:	271.11
Wavelength Maxima:	Excitation 395 nm, Emission 490 nm
Quantity:	25 mg
Purity:	>95% by HPLC
Storage:	-20°C. Desiccation recommended. Protect material from long-term exposure to light.
Shipping Condition:	Ambient



Description:

Monobromobimane (mBBr) is a thiol-reactive fluorescent probe used for the determination of the redox status of low molecular weight and protein thiols in biological systems. Monobromobimane-based in situ derivatization results in maximal recovery of both free, reduced low molecular weight and monobromobimane-accessible protein thiols. The quantitation of the corresponding adducts of protein thiols is achieved by fluorescence spectroscopy, following protein

precipitation. The reagent is particularly useful for quantifying glutathione.

References:

- (1.) Anderson et al *Anal Biochem*. 1999 272(1):107-9.
- (2.) Sakhi et al *J Chromatogr A*. 2007 1142(2):178-84.

Ion
Detection

Cellular
Staining

Cell
Viability

NO/RO
Detection

Reactive
Dyes &
Stains

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North/South America

ENZO LIFE SCIENCES INTERNATIONAL, INC.

5120 Butler Pike
Plymouth Meeting, PA 19462-1202
USA
Tel. 1-800-942-0430 / (610) 941-0430
Fax (610) 941-9252
info-usa@enzolifesciences.com

Switzerland & Rest of Europe

ENZO LIFE SCIENCES AG

Industriestrasse 17, Postfach
CH-4415 Lausen / Switzerland
Tel. + 41/0 61 926 89 89
Fax + 41/0 61 926 89 79
info-ch@enzolifesciences.com

Benelux

ENZO LIFE SCIENCES BVBA

Melkerijweg 3
BE-2240 Zandhoven / Belgium
Tel. +32/0 3 466 04 20
Fax +32/0 3 466 04 29
info-be@enzolifesciences.com

Germany

ENZO LIFE SCIENCES GmbH

Marie-Curie-Strasse 8
DE-79539 Lörrach / Germany
Tel. +49/0 7621 5500 526
Fax +49/0 7621 5500 527
info-de@enzolifesciences.com

UK & Ireland

ENZO LIFE SCIENCES (UK) LTD.

Palatine House
Matford Court
Exeter EX2 8NL / UK
Tel. 0845 601 1488 (UK customers)
Tel. +44/0 1392 825900 (overseas)
Fax +44/0 1392 825910
info-uk@enzolifesciences.com

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