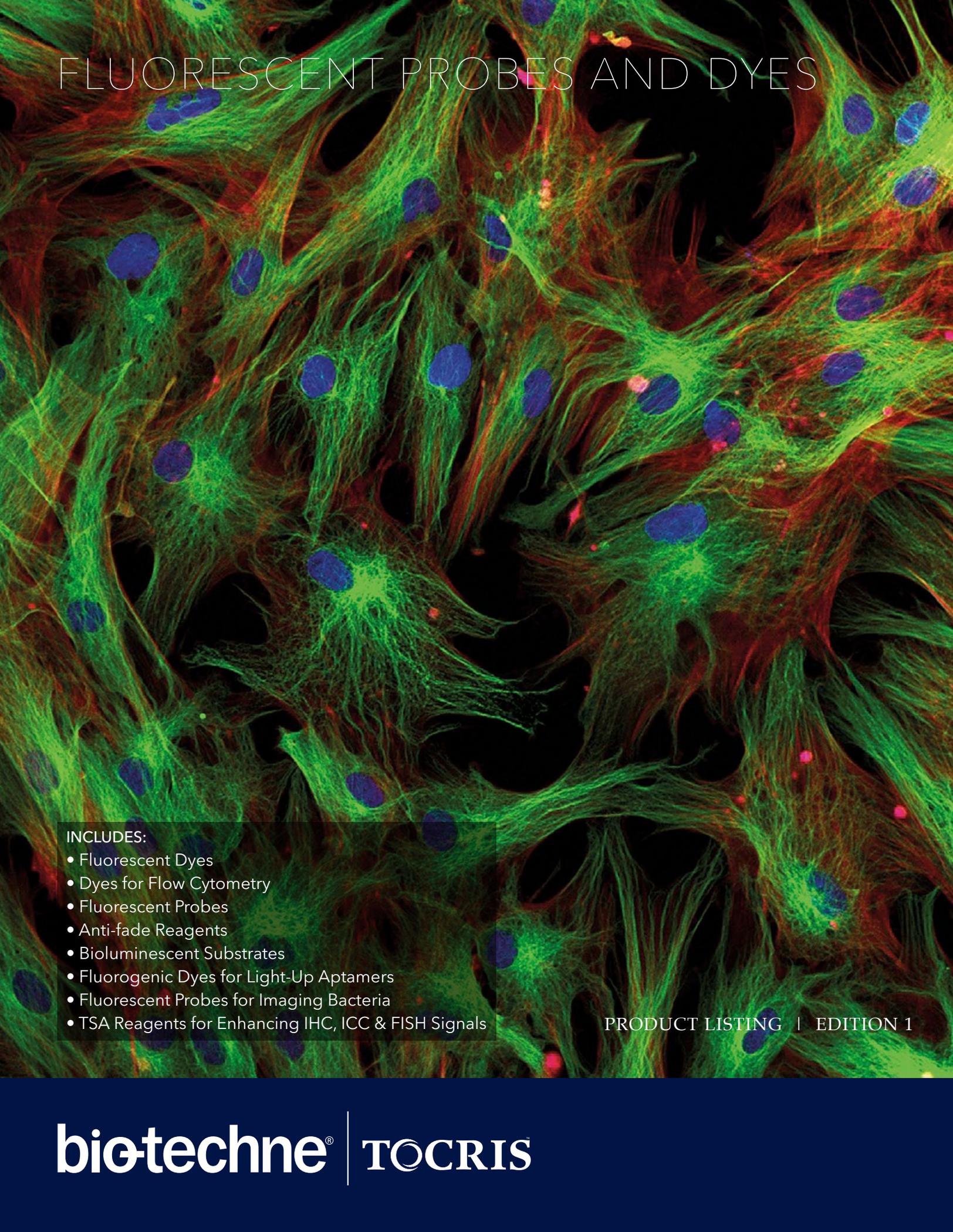


FLUORESCENT PROBES AND DYES

A fluorescence microscopy image showing a dense network of cells. The cytoskeleton is stained green, forming a complex web of filaments. The nuclei are stained blue, appearing as distinct, rounded structures. Small red puncta are scattered throughout the green network, likely representing specific organelles or protein localization. The background is black, making the fluorescent signals stand out.

INCLUDES:

- Fluorescent Dyes
- Dyes for Flow Cytometry
- Fluorescent Probes
- Anti-fade Reagents
- Bioluminescent Substrates
- Fluorogenic Dyes for Light-Up Aptamers
- Fluorescent Probes for Imaging Bacteria
- TSA Reagents for Enhancing IHC, ICC & FISH Signals

PRODUCT LISTING | EDITION 1

Tocris offers a wide range of gold standard fluorescent dyes, as well as exclusive and spectrally enhanced dyes, designed and manufactured in-house. These include probes conjugated to the next generation Janelia Fluor® dyes, known for their brightness, superior photostability and applications in live cells.

We also offer fluorescent probes covering over 20 targets, aptamer-based RNA imaging reagents and enhanced Tyramide Signaling Amplification (TSA) reagents, and much more, to facilitate the visualization of sub-cellular components in live and fixed cells. Each section highlights the key points and applications for each dye or probe range to help you find your ideal reagents.

For up to date product listings, visit [tocris.com/fluorescence-imaging](https://www.tocris.com/fluorescence-imaging)

This brochure lists fluorescence imaging reagents conveniently organized by types for easy selection. Feature boxes throughout this listing, identify the main principles of imaging technology and the application of corresponding product ranges. You will also find a flow cytometry table that groups dyes according to the most popular laser lines.

CONTENTS

FLUORESCENT DYES

Fluorescent Dyes	3
BDY (BODIPY®) Dyes.....	3
Cyanine (Cy) Dyes.....	3
Standard Fluorescein, Coumarin and Rhodamine Dyes.....	3
TFAX (AF) Dyes	3
FEATURE BOX: Spectra Viewer	3
Janelia Fluor® Dyes	4
FEATURE BOX: Next Generation Janelia Fluor® Dyes	5

FLOW CYTOMETRY

TABLE: Flow Cytometry Fluorophores for Common Laser Lines	6
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FLUORESCENT PROBES AND STAINS

Fluorescent Probes and Stains	7
Calcium Signaling Probes and Ca ²⁺ Indicator Dyes	7
Cell viability	7
Enzyme Probes and Enzyme Substrates	7
FEATURE BOX: Featured Calcium Signaling Probes and Ca²⁺ Indicator Dye - FURA-2AM (Cat. No. 2220)	7
Fluorescent Actin Probes	8
Fluorescent Amyloid β Probes	8
Fluorescent Cell Indicators and Sensors.....	8
Fluorescent Cell Surface Markers	8
Fluorescent Cholesterol Probes.....	8
Fluorescent DNA Stains	8
Fluorescent Endoplasmic Reticulum Probes.....	9
Fluorescent Integrin Probes	9

FEATURE BOX: Featured Fluorescent DNA Stain – Nucleic acid dye green I (Cat. No. 7246)	9
FEATURE BOX: Featured Fluorescent Endoplasmic Reticulum Probes – ReZolve-ER™ (Cat. No. 6640)	9
Fluorescent Lipid Probes and Cell Membrane Stains	10
Fluorescent Receptor Probes	10
Fluorescent RNA Probes	10
Fluorescent Transporter Probes	10
FEATURE BOX: Featured Fluorescent Transporter Probe – FFN 200 dihydrochloride (Cat. No. 5911)	10
Histology Stains.....	11
Microtubule Probes	11
FEATURE BOX: Featured Microtubule Probe – Taxol Janelia Fluor® 646 (Cat. No. 6266)	11
Mitochondria Dyes and Probes.....	11
Neurons & Astrocyte Probes	11

FLUORESCENT IMAGING REAGENTS

Anti-fade Reagents	12
FEATURE BOX: Featured Anti-fade Reagent – Trolox (Cat. No. 6002)	12
Bioluminescent Substrates	12
FEATURE BOX: Bioluminescent Imaging Advancements	12
Aptamer-based RNA Imaging Reagents	13
FEATURE BOX: Aptamer-based RNA Imaging Technology	13
Fluorescent Probes for Imaging Bacteria	14
FEATURE BOX: FDAA Probes for Imaging Bacteria	14
Tyramide Signal Amplification (TSA) Reagents	15
FEATURE BOX: TSA Reagents for Enhancing IHC, ICC & FISH Signals	15

FLUORESCENT DYES

Fluorescent dyes, or fluorophores, enable researchers to visualize specific biological molecules by fluorescence microscopy. Typically, they are conjugated to target molecules, such as antibodies, for use in techniques such as immunohistochemistry (IHC) and flow cytometry. The Tocris range includes the Janelia Fluor® Dyes, which are bright, photostable and cell-permeable, making them ideal for confocal fluorescent imaging and super-resolution microscopy (SRM) techniques in live and fixed cells. We also provide a great selection of gold standard dyes such as TFX dyes.

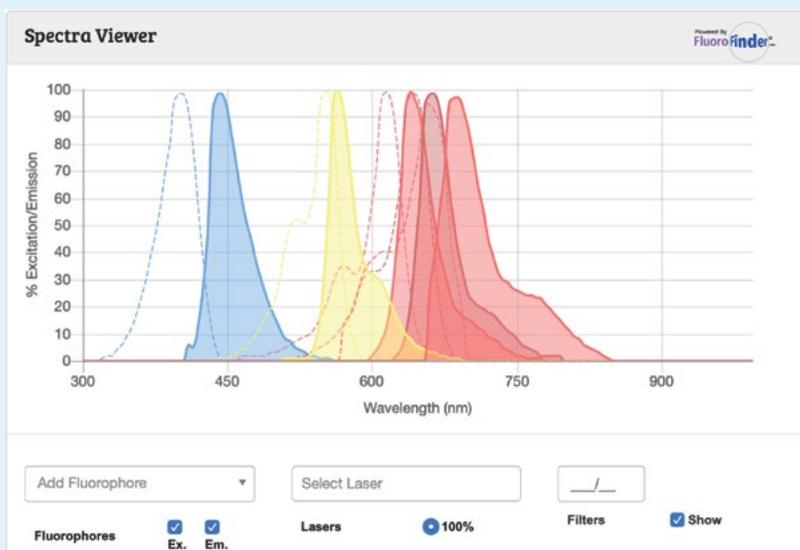
CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
FLUORESCENT DYES			
BDY (BODIPY®) Dyes			
5465	BDY FL, SE	Green dye, $\lambda_{abs}\lambda_{em}$ 502/510 nm. Alternative for FAM; Alexa Fluor® 488; DyLight 488; Cy2; NHS ester	5 mg
5620	BDY FL-X, SE	Green dye, $\lambda_{abs}\lambda_{em}$ 504/510 nm. Alternative for FAM; Alexa Fluor® 488; DyLight 488; Cy2; NHS ester	5 mg
5466	BDY TMR-X, SE	Yellow dye, $\lambda_{abs}\lambda_{em}$ 544/570 nm. 5-TAMRA; Alexa Fluor® 555; DyLight 549; TRITC; NHS ester	5 mg
5467	BDY TR-X, SE	Orange/red dye, $\lambda_{abs}\lambda_{em}$ 588/616 nm. Alternative for 5-TAMRA; Alexa Fluor® 555; DyLight 549; TRITC; NHS ester	5 mg
5468	BDY 630-X, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 625/640 nm. Alternative for BDY 650-X, SE; Cy5; Alexa Fluor® 647; NHS ester	5 mg
5469	BDY 650-X, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 646/660 nm. Alternative for BDY 630-X, SE; Cy5; Alexa Fluor® 647; NHS ester	5 mg
Cyanine (Cy) Dyes			
5435	Cyanine 3, SE	Orange dye, $\lambda_{abs}\lambda_{em}$ 550/570 nm. Alternative for Alexa Fluor® 546; DyLight 549; NHS ester	10 mg
5436	Cyanine 5, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 649/666 nm. Alternative for Alexa Fluor® 647; DyLight 649; NHS ester	10 mg
5437	Cyanine 7, SE	Near-infrared dye, $\lambda_{abs}\lambda_{em}$ 750/764 nm. Alternative for DyLight 780, Alexa Fluor® 750; NHS ester	10 mg
Standard Fluorescein, Coumarin and Rhodamine Dyes			
5440	FITC	Green dye, $\lambda_{abs}\lambda_{em}$ 495/525 nm	50 mg
6489	Ocean Blue, SE	Blue dye, $\lambda_{abs}\lambda_{em}$ 405/455 nm; NHS ester	5 mg
6257	OG 488, SE	Green dye, $\lambda_{abs}\lambda_{em}$ 496/516 nm. Alternative for TFX 488, SE, 5(6)-SFX (Fluorescein), SE, FITC; maleimide; NHS ester	5 mg
6488	5(6)-SFX (Fluorescein), SE	Green dye, $\lambda_{abs}\lambda_{em}$ 494/518 nm; NHS ester	10 mg
5442	Sulforhodamine 101 acid chloride	Orange dye, $\lambda_{abs}\lambda_{em}$ 588/601 nm; NHS ester	10 mg

FLUORESCENT IMAGING RESOURCE

SPECTRA VIEWER – PLAN YOUR EXPERIMENTS

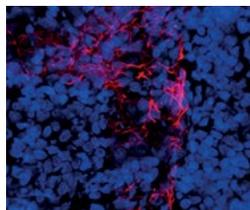
Use our spectra viewer to interactively plan your experiments, assessing multiplexing options. View the excitation and emission spectra for our fluorescent dye range and other commonly used dyes.

Visit tocris.com/resources/spectral-viewer



Alexa Fluor® and BODIPY is a registered trademark of Molecular Probes, Inc, a Thermo Fisher Scientific Company.

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
TFAX (AF) Dyes			
6619	TFAX 488, SE	Green dye, $\lambda_{abs}\lambda_{em}$ 496/515 nm. Alternative for Alexa Fluor® 488, AF 488, FITC, Cy2; NHS ester	1 mg
6621	TFAX 488, TFP	Green dye, $\lambda_{abs}\lambda_{em}$ 496/515 nm. Alternative for Alexa Fluor® 488, AF 488, FITC, Cy2; TFP	1 mg
6623	TFAX 546, SE	Yellow dye, $\lambda_{abs}\lambda_{em}$ 554/570 nm. Alternative for TMR, Cyanine3, Alexa Fluor® 546 SE, AF 546 SE; NHS ester	1 mg
6624	TFAX 568, SE	Orange dye, $\lambda_{abs}\lambda_{em}$ 578/602 nm. Alternative for Alexa Fluor® 568, Rhodamine red; NHS ester	1 mg
6625	TFAX 594, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 590/617 nm. Alternative for Alexa Fluor® 594, Texas Red®, Bodipy-TR; NHS ester	1 mg
Janelia Fluor® Dyes			
Amine-Reactive Janelia Fluor® Dyes			
7312	HM Janelia Fluor 526, SE	Spontaneously blinking green-emitting dye for SMLSM; $\lambda_{abs}\lambda_{em}$ 526/550 nm; NHS ester	1 mg
6296	Janelia Fluor® 525, SE	Yellow dye, $\lambda_{abs}\lambda_{em}$ 525/549 nm. Alternative for Alexa Fluor® 532, Alexa Fluor® 514, Atto 532, CF514, CF532; NHS ester	2 mg
6147	Janelia Fluor® 549, SE	Yellow dye, $\lambda_{abs}\lambda_{em}$ 549/571 nm. Alternative for Alexa Fluor® 546, Alexa Fluor® 555, BDY TMR-X, Atto 550, CF 555, TAMRA, Cyanine 3; NHS ester	2 mg
6418	Janelia Fluor® 585, SE	Orange dye, $\lambda_{abs}\lambda_{em}$ 585/609 nm. Alternative for Alexa Fluor® 568, Atto Rho12, Atto Rho101, CF594; NHS ester	2 mg
6419	Janelia Fluor® 635, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 635/652 nm. Alternative for Alexa Fluor® 633, Atto 633, CF633; NHS ester	2 mg
6148	Janelia Fluor® 646, SE	Red dye, $\lambda_{abs}\lambda_{em}$ 646/664 nm. Alternative for Alexa Fluor® 647, Atto 647, Atto 647N, CF640R, CF647, Cyanine 5; NHS ester	1 mg
6420	Janelia Fluor® 669, SE	Far red dye, $\lambda_{abs}\lambda_{em}$ 669/682 nm. Alternative for Alexa Fluor® 660, Atto 655, Atto 665, CF660R; NHS ester	2 mg
Click-Reactive Janelia Fluor® Dyes			
6501	Janelia Fluor® 549, Azide	Yellow dye, $\lambda_{abs}\lambda_{em}$ 549/571 nm. Alternative for Alexa Fluor® 546, Alexa Fluor® 555, BDY TMR-X, Atto 550, CF 555, TAMRA, Cyanine 3; free acid	2 mg
6502	Janelia Fluor® 549, Tetrazine	Yellow dye, $\lambda_{abs}\lambda_{em}$ 549/571 nm. Alternative for Alexa Fluor® 546, Alexa Fluor® 555, BDY TMR-X, Atto 550, CF 555, TAMRA, Cyanine 3; Tetrazine	200 µg
7088	Janelia Fluor® 646, Azide	Red dye, $\lambda_{abs}\lambda_{em}$ 646/664 nm. Alternative for Alexa Fluor® 647, Atto 647, Atto 647N, CF640R, CF647, Cyanine 5; Azide	2 mg
7279	Janelia Fluor® 646, Tetrazine	Red dye, $\lambda_{abs}\lambda_{em}$ 646/664 nm. Alternative for Alexa Fluor® 647, Atto 647, Atto 647N, CF640R, CF647, Cyanine 5; Tetrazine	200 µg
Free Acid Janelia Fluor® Dyes			
6503	Janelia Fluor® 549, free acid	Yellow dye, $\lambda_{abs}\lambda_{em}$ 549/571 nm. Alternative for Alexa Fluor® 546, Alexa Fluor® 555, BDY TMR-X, Atto 550, CF 555, TAMRA, Cyanine 3; free acid	5 mg
6993	Janelia Fluor® 646, free acid	Red dye, $\lambda_{abs}\lambda_{em}$ 646/664 nm. Alternative for Alexa Fluor® 647, Atto 647, Atto 647N, CF640R, CF647, Cyanine 5; free acid	5 mg
Sulfhydryl-Reactive Janelia Fluor® Dyes			
6500	Janelia Fluor® 549, Maleimide	Yellow dye, $\lambda_{abs}\lambda_{em}$ 549/571 nm. Alternative for Alexa Fluor® 546, Alexa Fluor® 555, BDY TMR-X, Atto 550, CF 555, TAMRA, Cyanine 3; maleimide	2 mg
6590	Janelia Fluor® 646, Maleimide	Red dye, $\lambda_{abs}\lambda_{em}$ 646/664 nm. Alternative for Alexa Fluor® 647, Atto 647, Atto 647N, CF640R, CF647, Cyanine 5; maleimide	2 mg
Photoactivatable Janelia Fluor® Dyes			
6149	PA Janelia Fluor® 549, SE	Yellow photoactivatable dye; NHS ester. Applications: super resolution microscopy (PALM), single molecule tracking and live cell imaging	300 µg
6150	PA Janelia Fluor® 646, SE	Red photoactivatable dye (Reactive group: NHS ester). Applications: super resolution microscopy (PALM), single molecule tracking and live cell imaging	300 µg



Novus Custom Conjugation

For pre-conjugated options, we also offer Janelia Fluor® conjugated antibodies and custom conjugation services through our sister brand, Novus Biologicals.

Visit novusbio.com/products/janelia-fluor

NEXT GENERATION JANELIA FLUOR® DYES

Developed by Professor Luke Lavis and his team at the Janelia Research Campus, Janelia Fluor® (JF) dyes provide scientists with an exceptional palette of bright, photostable fluorophores for a broad range of applications, including super-resolution microscopy. The Janelia Fluor® range includes products that possess different specific and useful properties, such as: fluorogenicity; spontaneous blinking (for facile single-molecule localization microscopy (SMLM)); and photoactivation.

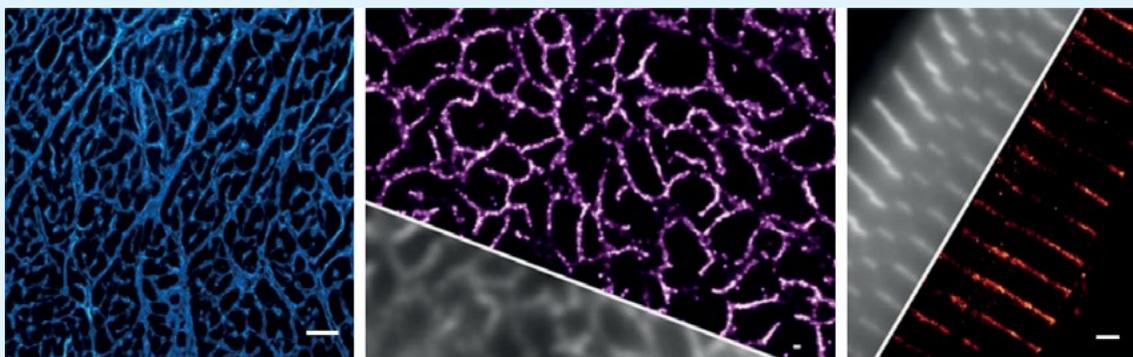
The full range of Janelia Fluor® dyes are available from Tocris with a selection of reactive groups for conjugation to biomolecules. Custom services are available if you need a modification not currently offered.

Conjugation protocols are available at [tocris.com/resources/protocols](https://www.tocris.com/resources/protocols)

We also offer Janelia Fluor® conjugated antibodies and custom conjugation services through our sister Bio-Techne brand Novus Biologicals. Visit [novusbio.com/products/janelia-fluor](https://www.novusbio.com/products/janelia-fluor)

Janelia Fluor® Dye Key Features and Applications

- Exceptionally Bright
- Cell Permeable
- Highly Photostable
- Supplied with a choice of reactive groups for simple biomolecule conjugation
- Can be converted to relevant substrate for use in self-labeling tag systems, e.g. HaloTag® and SNAP-tag®
- Suitable for use in confocal microscopy, IHC, ICC and flow cytometry
- Especially well-suited to live-cell imaging
- Ideal for super-resolution techniques including STED and dSTORM
- Photoactivatable Janelia Fluor® dyes compatible with PALM microscopy



Application of Janelia Fluor® Dyes in Cardiac Tissue. Left – Widefield fluorescence image displaying the distribution of collagen VI in the interstitial space between muscle cells. Labeled with primary ab against collagen VI and secondary ab conjugated to JF549 (#6147). Scale: 50 μ m. Middle – An adult pig heart tissue section, 10 μ m thick, labeled with abs against SERCA2ATPase, exhibits the intricate structure of the sarcoplasmic reticulum. A super-resolution image (top), obtained by exploiting spontaneous photo-switching of JF549 (dSTORM), shows superior detail to the diffraction limited widefield image (bottom). Scale: 200 nm. Right – Rat cardiomyocyte stained against α -actinin, displaying its periodic structure localised at the ends of sarcomeres (Z-discs). Widefield fluorescence of JF549 (left), prior to illuminating with a 561 nm laser to induce photoswitching and produce a dSTORM super-resolution image (right). Scale: 1 μ m. All images kindly provided by Prof. Christian Soeller, University of Exeter; acquired by Alex Clowsley and Anna Meletiou.

What Researchers are Saying about Janelia Fluor® Conjugates

"We have been using the JF secondary antibodies and like them a lot for IHC. As advertised, they seem to be at least a little brighter and more photostable than the Alexa 647 and Cy3 dyes we had been using. We will probably switch over to these completely going forward."

Steve Stowers, PhD, Assistant Professor, Montana State University

"It's a great antibody and great fluorophore by its signal sharpness and photo stability."

Anonymous

HaloTag is a trademark of Promega Corporation, and SNAP-tag is a trademark of New England BioLabs, Inc.

FLOW CYTOMETRY

Flow Cytometry (FCM) is a widely used technique for cell counting, fluorescence-activated cell sorting (FACS), cell cycle analysis, identifying cell populations in heterogeneous samples, analyzing cell characteristics and function, as well as measuring cell surface and intracellular molecules.

Tips for selecting fluorophores:

- Pick a fluorophore with excitation and emission wavelength close to the laser line of your flow cytometer to ensure maximum efficiency.
- Pick the brightest dye for your lowest-density target and for those that display poor labeling efficiency, particularly when multiplexing.
- Ensure minimum spectral contamination “spillover” by selecting dyes with the most distinctly different emission and excitation spectra’s possible.

FLOW CYTOMETRY FLUOROPHORES FOR COMMON LASER LINES (λ - nm)						
UV or near UV 355 or 377 nm	Violet 405-407 nm	Blue 488 nm	Green 532 nm	Yellow 561-568 nm	Red 633 or 647 nm	Infra Red 808 nm
DAPI (5748)	DAPI (5748)	FITC (5440)	Cyanine 3, SE (5435)	Janelia Fluor® 549, SE (6147)	Cyanine 5, SE (5436)	Cyanine 7, SE (5437)
Hoechst 33342 (5117)	Ocean Blue, SE (6489)	Mitomark Green I (6444)	Propidium iodide (5135)	Janelia Fluor® 549, Azide (6501)	Janelia Fluor® 646, SE (6148)	
Hoechst 33258 (5824)		TFAX 488, SE (6619)		Janelia Fluor® 549, Tetrazine (6502)	Janelia Fluor® 646, Azide (7088)	
		TFAX 488, TFP (6621)		Janelia Fluor® 549, free acid (6503)	Janelia Fluor® 646, free acid (6993)	
		OG 488 (6257)		Janelia Fluor® 549, Maleimide (6500)	Janelia Fluor® 646, Maleimide (6590)	
		5(6)-SFX (Fluorescein), SE (6488)		TFAX 546, SE (6623)		
		Calcein AM (5119)		TFAX 568, SE (6624)		
		H2DCFDA (5935)		Sulforhodamine 101 acid chloride (Texas red) (5442)		
		Propidium iodide (5135)				
		Cyanine 3, SE (5435)				
		7-AAD (7121)				

FLOW CYTOMETRY PANEL BUILDER TOOL

Use our sister brand Novus’ flow cytometry panel builder tool to design your experiment, it enables you to find validated antibodies that work with specific cytometers. Your panel can be exported and saved for reference. Advanced features of this tool include a spectra viewer, spillover popups and antigen density selector.

Visit novusbio.com/flow-panel-builder



Bio-Techne’s Flow Cytometry Handbook

Our Flow Cytometry Handbook is the must have resource for researchers doing flow cytometry.

Download now to see the step-by-step protocols and troubleshooting tips.

Visit info.bio-techne.com/flow-cytometry-handbook

FLUORESCENT PROBES AND STAINS

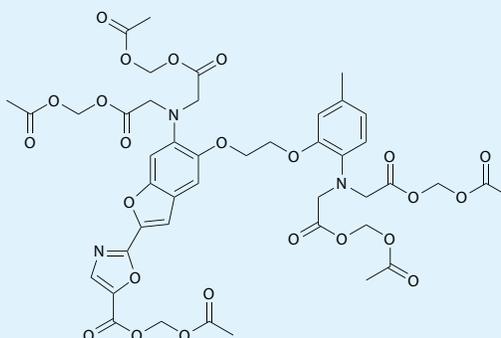
Fluorescent probes bind to receptors or proteins and enable researchers to detect particular components of complex biomolecular assemblies, such as microtubules, with high sensitivity and selectivity. Tocris offers a wide selection of fluorescent probes, covering organelle probes and cell viability stains and dyes.

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
FLUORESCENT PROBES AND STAINS			
Calcium Signaling Probes and Ca²⁺ Indicator Dyes			
6255	Fluo-4 AM	Cell-permeable, fluorescent Ca ²⁺ indicator	1 mg
2220	FURA-2AM	Fluorescent Ca ²⁺ indicator	1 mg
6704	Indo 1AM	Fluorescent Ca ²⁺ indicator	1 mg
3953	cis-Ned 19	Fluorescently labels NAADP receptors in intact cells; inhibits Ca ²⁺ release	10 mg
3954	trans-Ned 19	Fluorescently labels NAADP receptors in intact cells; inhibits Ca ²⁺ release	10 mg
6256	OG 488 BAPTA-1 AM	Cell-permeable, fluorescent Ca ²⁺ indicator	1 Pack (10 x 50 µg)
Cell Viability			
5092	Acridine Orange HCl	Emits green fluorescence when bound to double stranded DNA and red fluorescence when bound to RNA or single stranded DNA; used in cell cycle and apoptosis studies	50 mg
5119	Calcein AM	Cell permeable compound; hydrolyzed to become fluorescent in living cells	1 mg
5117	Hoechst 33342	Used as indicator of apoptosis; fluorescent dye for labeling DNA	50 mg
5824	Hoechst 33258	Used to quantify DNA in viable cells	50 mg
5135	Propidium Iodide	Red-fluorescent DNA stain; membrane impermeant to live cells. Pi staining differentiates live and dead cells	10 mg
Enzyme Probes and Enzyme Substrates			
4815	3-Cyano-7-ethoxycoumarin	Fluorescent cytochrome P450 substrate	10 mg 50 mg
6882	DiFMUP	Fluorescent phosphatase substrate	5 mg
6204	7-Ethoxyresorufin	Fluorometric CYP450 substrate	10 mg
6574	Fluorescein-NAD ⁺	Fluorescent NAD ⁺ ; substrate for ADP-ribosylation for use in PARP assays	81 µg
2875	Homovanillic acid	Fluorimetric reagent	50 mg

FEATURED CALCIUM SIGNALING PROBES AND CA²⁺ INDICATOR DYE – FURA-2AM (CAT. NO. 2220)

FURA-2AM is a fluorescent Ca²⁺ indicator. It is selective for Ca²⁺ over other divalent cations: Mg²⁺, Zn²⁺, Fe²⁺ and Mn²⁺. FURA-2AM is used to determine intracellular Ca²⁺ concentration.

FURA-2AM can be easily solubilized in F 127 (Cat. No. 6523). To see how our customers have used FURA-2AM view product citations at [tocris.com/products/fura-2am_2220#product-citations](https://www.tocris.com/products/fura-2am_2220#product-citations)

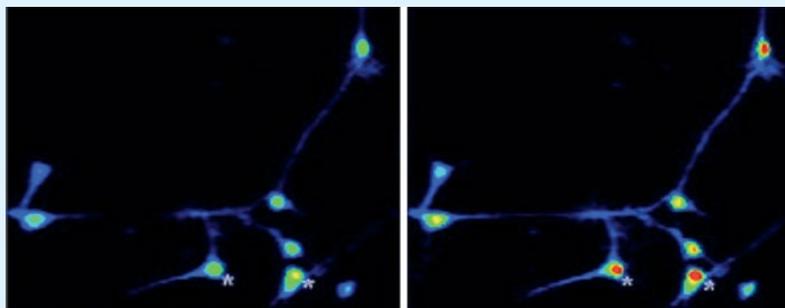


See what our customers think:

FURA-2AM ★★★★★ Reviews

Detects cytosolic calcium influx changes well

Used in live cell calcium imaging assay to study glutamate receptor signaling in neurons. Used at a concentration of 5 micromolar (along with pluronic). Images show changes in fura-2 fluorescence pre (left) and post (right) glutamate stimulation.



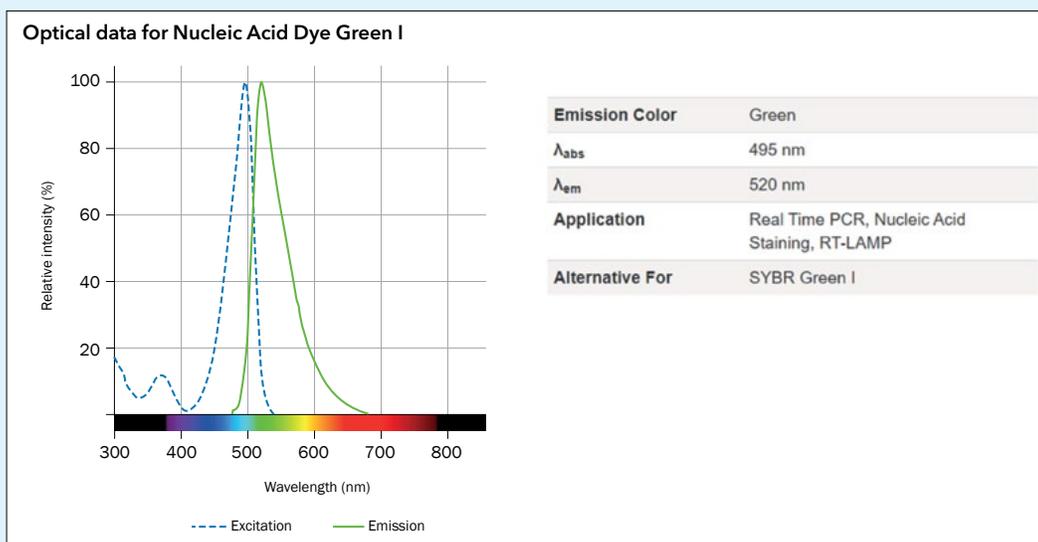
See more customer reviews for FURA-2AM at [fura-2a-reviews](https://www.tocris.com/products/fura-2am_2220#product-citations)

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
4814	Methoxyresorufin	Fluorometric CYP450 substrate	10 mg
6461	PARPi-FL	Potent fluorescent PARP inhibitor; cell permeable	1 mg
4086	PE 154	Fluorescent, potent AChE and BChE inhibitor	10 mg 50 mg
4816	Pentoxresorufin	Fluorometric cytochrome P450 substrate	10 mg
7232	SBP1-FITC	Fluorescent ACE2-derived peptide; binds receptor binding domain of SARS-CoV-2 spike protein	1 mg
7288	Thalidomide-Cyanine 5	Fluorescent cereblon probe, $\lambda_{abs}\lambda_{em}$ 650/665	1 mg
Fluorescent Actin Probes			
5782	Phalloidin-FITC	Green fluorescent cytoskeleton stain	12 μ g
6622	Phalloidin-TFAX 488	Green fluorescent cytoskeletal stain; binds F-actin	12 μ g
5783	Phalloidin-TRITC	Red-orange fluorescent cytoskeleton stain	12 μ g
Fluorescent Amyloid β Probes			
5908	Bis-ANS	Fluorescent probe for nonpolar cavities in proteins; used to detect A β fibres	10 mg
5167	Congo Red	Amyloid fibril binding dye; also a VGlut inhibitor	50 mg
4803	CRANAD 2	Near-infrared probe that detects A β 40 aggregates	10 mg
3144	K-114	Amyloid fibril-specific fluorescent dye	10 mg 50 mg
4920	Methoxy-X04	Fluorescent amyloid β detector; brain penetrant	10 mg 50 mg
4086	PE 154	Fluorescent, potent AChE and BChE inhibitor	10 mg 50 mg
Fluorescent Cell Indicators and Sensors			
5119	Calcein AM	Cell permeable compound; hydrolyzed to become fluorescent in living cells	1 mg
6594	GSHtracer	Ratiometric glutathione (GSH) probe	2 mg
5935	H2DCFDA	Fluorescent ROS indicator; cell permeable	100 mg
5085	L 012 sodium salt	Chemiluminescent ROS and RNS indicator	10 mg
4428	MitoPY1	Fluorescent mitochondrial hydrogen peroxide indicator	10 mg
6065	2-NBDG	Fluorescent glucose uptake indicator	5 mg
2919	NPE-caged-HPTS	Caged fluorescent pH indicator	5 mg
4944	Peroxy Orange 1	Fluorescent hydrogen peroxide indicator	10 mg
6182	Pimonidazole	Hypoxia detection reagent	10 mg
4943	Sulfidefluor 7 AM	H ₂ S fluorescent probe	1 mg
Fluorescent Cell Surface Markers			
6556	Anti-human EGFR aptamer, Janelia Fluor® 646 conjugate	High affinity anti-human EGFR aptamer conjugated to Janelia Fluor® 646	50 μ g
6557	Anti-human ErbB2 aptamer, Janelia Fluor® 646 conjugate	High affinity anti-human ErbB2 aptamer conjugated to Janelia Fluor® 646	50 μ g
6103	CD133-A15, 5'-DY647	High affinity fluorescently tagged aptamer for CD133 (AC133 epitope)	50 μ g
6104	CD133-B19, 5'-DY647	High affinity fluorescently tagged aptamer for CD133 (extracellular domain epitope)	50 μ g
6102	Ep23, 5'-DY647	High affinity fluorescently tagged aptamer for EpCam	50 μ g
Fluorescent Cholesterol Probes			
6250	Filipin	Fluorescent cholesterol stain; also polyene antibiotic	1 mg
Fluorescent DNA Stains			
5092	Acridine Orange	Nucleic acid binding dye	50 mg
7121	7-Aminoactinomycin D	Fluorescent DNA stain	1 mg
5748	DAPI	Fluorescent DNA stain	10 mg 50 mg
5824	Hoechst 33258	Fluorescent dye for labeling DNA	50 mg
5117	Hoechst 33342	Fluorescent dye for labeling DNA	50 mg
6406	Hydroxystilbamidine bis(methanesulfonate)	Displays different fluorescence emission wavelengths when bound to DNA compared to RNA	10 mg
7246	Nucleic Acid Dye Green I	High affinity double-stranded DNA (dsDNA) probe; used in RT-LAMP and qPCR	500 μ L
5135	Propidium Iodide	Red-fluorescent DNA stain; membrane impermeant to live cells. Pi staining differentiates live and dead cells	10 mg

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
Fluorescent Endoplasmic Reticulum (ER) Probes			
6640	ReZolve-ER™	Fluorescent ER and plasma membrane stain	1.8 mg
Fluorescent Integrin Probes			
6997	BOP-JF646	Red fluorescent dual $\alpha_9\beta_1/\alpha_4\beta_1$ integrin inhibitor; fluorogenic;	100 μ g
6996	BOP-JF549	Yellow fluorescent dual $\alpha_9\beta_1/\alpha_4\beta_1$ integrin inhibitor; fluorogenic	100 μ g
4577	LDV FITC	Fluorescent ligand for $\alpha_4\beta_1$ (VLA-4)	1 mg
6048	R-BC154	High affinity fluorescent $\alpha_4\beta_1/\alpha_9\beta_1$ inhibitor; mobilizes HSCs	1 mg

FEATURED FLUORESCENT DNA STAIN – NUCLEIC ACID DYE GREEN I (CAT. NO. 7246)

Nucleic Acid Dye Green I is an asymmetric cyanine dye that specifically binds to double-stranded (ds) DNA. It is frequently used in qPCR and as a stain for in-gel visualization of DNA. Nucleic Acid Dye Green I is also used in the detection of amplification products in Loop-Mediated Isothermal Amplification (LAMP) assays; this method has been used for the detection of SARS-CoV-2 virus. When bound to dsDNA the fluorescence intensity of Nucleic Acid Dye Green I is 1000-fold greater than when in the unbound form. This dye does not require washing or de-staining steps, expediting experimental time. Nucleic Acid Dye Green I is compatible with all commonly used fluorescence detection systems. This product is sold as a DMSO stock for ease of use.

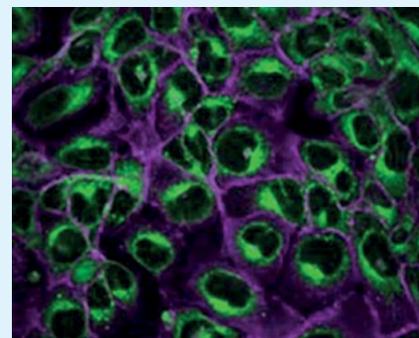


FEATURED FLUORESCENT ENDOPLASMIC RETICULUM PROBE – REZOLVE-ER™ (CAT. NO. 6640)

ReZolve-ER™ is a fluorescent endoplasmic reticulum and plasma membrane stain. It exhibits rapid uptake in live cells and displays low cytotoxicity, and is resistant to photobleaching. ReZolve-ER is suitable for imaging live and fixed cells in short and long time course experiments. It is compatible with fluorescent microscopy using single photon excitation at 403 nm or two-photon excitation between 800 and 830 nm. Excitation/emission λ : 350–405 nm / 500–650 nm.

APPLICATION OF ReZolve-ER™ ON PNT2 PROSTATE EPITHELIAL CELLS

PNT2 prostate epithelial cells stained with ReZolve-ER™ (green) and CellMask (purple)*. Cells are incubated with growth media containing 20 μ M ReZolve-ER™ for 10–20 min before imaging. Cells were viewed using a Nikon+A1 confocal microscope, ReZolve-ER™ is excited at 403 nm and emission is collected using a 525 nm GaaS PMT detect.



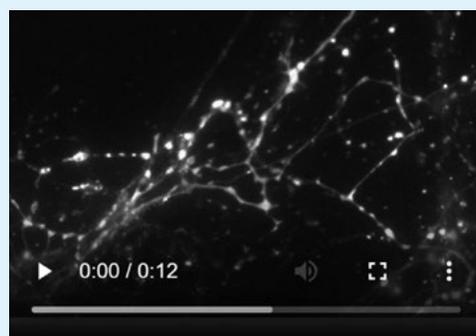
*CellMask was purchased from Thermo Fisher

Learn more at tocris.com/rezolve-er

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
Fluorescent Lipid Probes and Cell Membrane Stains			
5702	DiD perchlorate	Lipophilic fluorescent dye; shown to stain HSCs	25 mg
6250	Filipin III	Binds sterols in fungal membranes; fluorescent cholesterol stain; also polyene antibiotic	1 mg
5118	SynaptoRed™ C2	Fluorescent dye; stains synaptic vesicles	1 mg
Fluorescent Receptor Probes			
5122	Dansyl-NECA	Potent and selective fluorescent adenosine A ₁ agonist	1 mg
6873	DC-271	Fluorescent retinoic acid analog; solvchromatic probe	5 mg
5561	IHR-Cy3	Potent fluorescent Smo antagonist	1 mg
6046	Naloxone fluorescein	Fluorescent opioid antagonist; fluorescent-derivative of naloxone (Cat. No. 0599)	100 µg
2540	Tocrifluor T1117	Fluorescent cannabinoid ligand; fluorescent form of AM 251 (Cat. No. 1117)	100 µg
Fluorescent RNA Probes			
5092	Acridine Orange	Emits green fluorescence when bound to dsDNA and red fluorescence when bound to RNA or single stranded DNA	50 mg
5609	DFHBI	GFP fluorophore mimic for imaging RNA in living cells; activated by binding Spinach2 and Broccoli aptamers	10 mg 50 mg
5610	DFHBI 1T	GFP fluorophore mimic for imaging RNA in living cells; activated by binding Spinach2 and Broccoli aptamers	10 mg
6434	DFHO	RFP fluorophore mimic for imaging RNA in living cells; activated by binding Corn aptamers	10 mg
6406	Hydroxystilbamidine bis(methanesulfonate)	Displays different fluorescence emission wavelengths when bound to DNA compared to RNA. Also used as a neuronal tracer	10 mg
7246	Nucleic Acid Dye Green I	RNA probe; also high affinity double-stranded DNA (dsDNA) probe	500 µL
Fluorescent Transporter Probes			
0846	Chicago Sky Blue 6B	Potent inhibitor of L-glutamate uptake into synaptic vesicles; dye also used as counterstain in histochemistry	1 g
0845	Evans Blue	Dye for assessing cell viability and blood brain barrier permeability; also EAAT inhibitor and iGluR antagonist	1 g
5200	FFN 102	Selective fluorescent substrate of DAT and VMAT2	10 mg
5911	FFN 200	Selective fluorescent VMAT2 substrate	10 mg
5043	FFN 206	Fluorescent VMAT2 substrate	10 mg
6717	FFN 270	Fluorescent substrate for NET and VMAT2	10 mg
3878	FFN 511	Fluorescent substrate for VMAT2	10 mg
6065	2-NBDG	Fluorescent glucose uptake indicator	5 mg
5168	Rose Bengal	VGLut and VMAT inhibitor; stains exposed epithelium in eye	50 mg

FEATURED FLUORESCENT TRANSPORTER PROBE – FFN 200 DIHYDROCHLORIDE (CAT. NO. 5911)

FFN 200 is a selective fluorescent VMAT2 substrate. It selectively traces exocytosis in dopaminergic neuronal cell culture and brain tissue. Excitation and emission maxima are 352 and 451 nm, respectively.



FFN 200 IN CULTURED DOPAMINE NEURONS

FFN 200 in vesicle clusters in axons of cultured dopaminergic neurons, and exocytosis upon high potassium stimulation (time lapse acquisition at 12 images/min).

Sold with the permission of Columbia University.

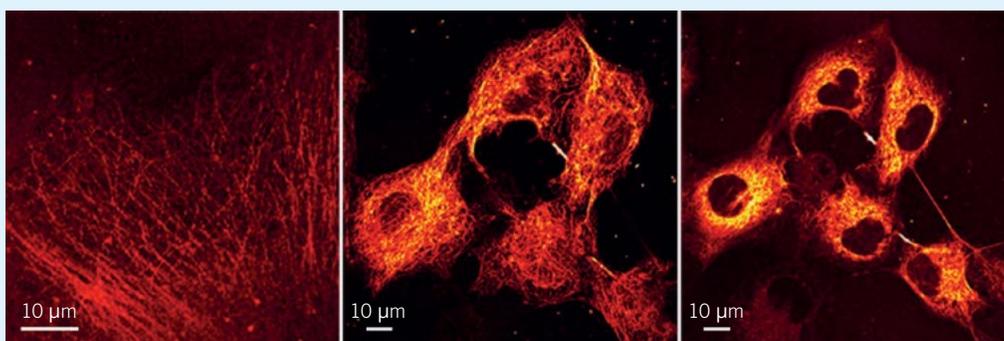
Watch FFN 200 in action: visit [tocris.com/ffnc-200](https://www.tocris.com/ffnc-200)

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
Histology Stains			
5222	Hematoxylin	Histologic stain; used to stain cell nuclei	25 g
3213	Methylene Blue	Biological stain	50 mg
Microtubule Probes			
2226	Flutax 1	Fluorescent taxol derivative; binds microtubules	1 mg
6254	Flutax 2	Green fluorescent taxol derivative; binds microtubules	100 µg
6267	Taxol Janelia Fluor® 549	Yellow fluorescent taxol derivative; probe for microtubule staining	100 µg
6266	Taxol Janelia Fluor® 646	Red fluorescent taxol derivative; probe for microtubule staining; protocol available	1 mg

FEATURED MICROTUBULE PROBE – TAXOL JANELIA FLUOR® 646 (CAT. NO. 6266)

Taxol Janelia Fluor® 646 is a red fluorescent taxol derivative for direct imaging of the microtubule cytoskeleton. This dye is **Fluorogenic**: fluoresces only once bound to microtubules, enabling hassle-free no-wash experiments. Excitation maximum = 655 nm; emission maximum = 671 nm.

Protocol available at [tocris.com/taxol-jf646-protocol](https://www.tocris.com/taxol-jf646-protocol)



Application of Taxol Janelia Fluor® 646, dye on COS7 cells. COS7 cells were labeled with 3 µM Taxol Janelia Fluor® 646 for one hour at 37°C. Images were taken on a Leica TCS SP8 Confocal Laser Scanning Microscope.

All images kindly provided by Prof. Christian Soeller, University of Exeter; acquired by Evelina Lucinskaite, Anna Meletiou and Alexander Clowsley.

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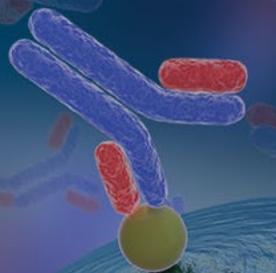
Mitochondria Dyes and Probes			
6444	MitoMark Green I	Green fluorescent mitochondrial stain; cell permeable	1 Pack (10 x 50 µg)
6445	MitoMark Red I	Red fluorescent mitochondrial stain; cell permeable	1 Pack (10 x 50 µg)
Neuron & Astrocyte Probes			
6406	Hydroxystilbamidine bis(methanesulfonate)	Fluorescent cationic dye; neuronal tracer	10 mg
5146	Sulforhodamine 101	Red fluorescent dye; selective astrocyte marker	50 mg
5118	SynaptoRed™ C2	Fluorescent dye; stains synaptic vesicles	1 mg



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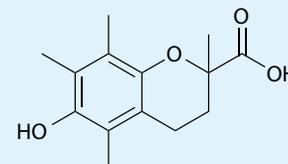
FLUORESCENT IMAGING REAGENTS

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
ANTI-FADE REAGENTS			
4055	L-Ascorbic acid	Commonly used antifade reagent in live cell microscopy; naturally occurring antioxidant	50 mg
6002	Trolox	Antifade reagent; antioxidant vitamin E derivative; cell permeable and water soluble	100 mg

FEATURED ANTI-FADE REAGENT – TROLOX (CAT. NO. 6002)

Suppressing photobleaching using antifade reagents prolongs fluorescent signal intensity and longevity, allowing for high quality long exposure imaging experiments, which is important for time-lapse microscopy, super resolution microscopy (SRM) and signal molecule tracking microscopy, among others. Maximizing the amount of data achieved from an experiment, saves on time, lab resources and money.

Trolox is a commonly used antifade reagent in live cell imaging, which suppresses blinking and photobleaching. It is cell-permeable and water soluble. Trolox provides two-fold protection, reducing photobleaching at a quantum level, and reducing oxidative damage in cells.



Learn more at [tocris.com/products/trolox_6002](https://www.tocris.com/products/trolox_6002)

BIOLUMINESCENT SUBSTRATES			
6823	CycLuc 1	Synthetic luciferase substrate; brain penetrant	10 mg
5427	D-Luciferin	Firefly luciferase substrate; cell permeable.	10 mg 50 mg
6555	TokeOni	NIR-emission luciferin analog; orally bioavailable and brain penetrant	5 mg

BIOLUMINESCENT IMAGING ADVANCEMENTS

Bioluminescent substrates are commonly utilized for non-invasive monitoring of biological processes, for example in bioluminescence imaging (BLI) in both *in vivo* and *in vitro* settings. Luciferase substrates emit light when they become oxidized, which can be detected using fluorescence microscopy.

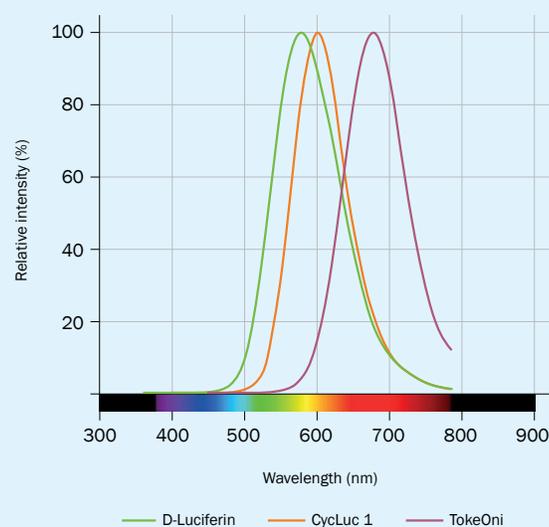
FIREFLY LUCIFERASE (FLUC) AND D-LUCIFERIN

The Firefly luciferase (Fluc) and **D-Luciferin** BLI system has long been utilized in standard lab techniques such as monitoring tumor growth and intracellular signaling activity *in vitro* and *in vivo*. While this system is very useful for many applications, it is less suitable for experiments requiring detection in deep tissue, because of the relatively short emission wavelength produced by D-Luciferin: emission maximum (λ_{\max}) of 562 nm. This wavelength is very similar to those of melanin ($\lambda_{\max} \sim 600$ nm) and hemoglobin ($\lambda_{\max} = 415-577$ nm), making signal detection of D-luciferin emanating deep from with tissue challenging to detect.

DEEP TISSUE BIOLUMINESCENT IMAGING: TOKEONI-AKALUC

A major breakthrough in bioluminescent imaging came from engineering luciferases and substrates for near infrared (NIR) wavelength emission, which produced a significantly brighter bioluminescence, and lower toxicity than Fluc, allowing high concentrations of AkaLuc to accumulate inside the cell. Engineered AkaLuc substrate **TokeOni** (Cat. No. 6555) (Akalumine-HCl), with an emission spectrum in the NIR range ($\lambda_{\max} = 677$ nm), generates exceptional signal sensitivity from deep within tissue, exhibits good brain permeability and is orally bioavailable. The improved properties of the TokeOni-AkaLuc pairing has opened up a new range of applications including monitoring neuronal activity-dependent gene expression, tracking tumor metastasis and immune cell migration, as well as proving a useful tool for assessing the efficiency of gene delivery and gene editing technologies.

Bioluminescent Substrate Emission Spectra



Emission spectra of bioluminescent substrates. D-Luciferin, CycLuc 1 and TokeOni span the color spectrum, making them suitable for different applications. TokeOni is well suited to deep tissue *in vivo* applications because of its NIR emission wavelength.

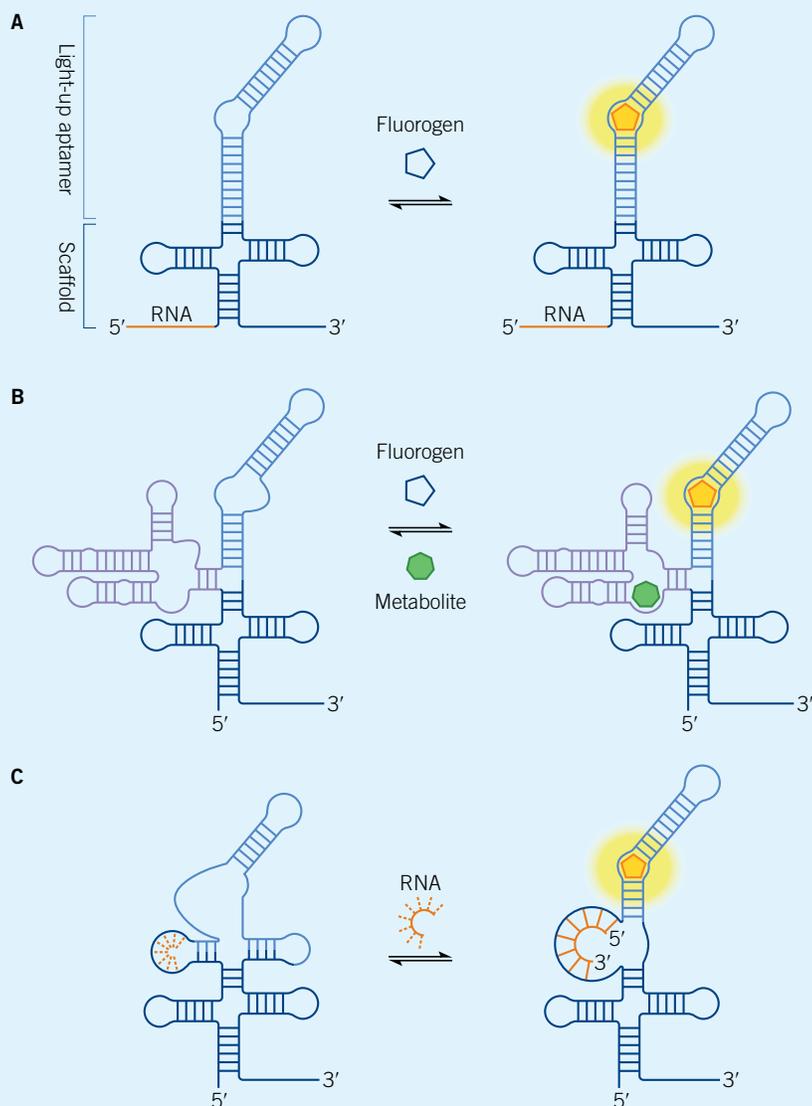
Learn more at [tocris.com/bioluminescent-substrates](https://www.tocris.com/bioluminescent-substrates)

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
APTAMER-BASED RNA IMAGING REAGENTS			
5609	DFHBI	GFP fluorophore mimic for imaging RNA in living cells; activated by binding Spinach2 and Broccoli aptamers	10 mg 50 mg
5610	DFHBI 1T	GFP fluorophore mimic for imaging RNA in living cells; activated by binding Spinach2 and Broccoli aptamers	10 mg
6434	DFHO	RFP fluorophore mimic for imaging RNA in living cells; activated by binding Corn aptamers	10 mg
7277	HBC 530	GFP fluorophore mimic for imaging RNA in live cells; activated by binding to Pepper aptamers; suitable for confocal and two-photon microscopy	60 µg

APTAMER-BASED RNA IMAGING TECHNOLOGY

Light-up aptamers or Fluorescent light-up aptamers (FLAPs) are a genetically-encoded RNA imaging platform. They are designed to bind specific fluorogenic dyes that 'light-up' only in the bound state. This property of 'fluorogenicity' means that fluorescence can be 'switched on' upon RNA expression. An RNA-based fluorogenic complex or module is made up of two parts, a light-up RNA aptamer, and a fluorogenic cognate dye, the "fluorogen", which binds the light-up aptamer with high affinity. Once bound, the complex becomes highly fluorescent.

Light-up Aptamer Applications



Light-up Aptamer systems offer several advantages over traditional MS2 and GFP imaging systems:

- Fluorogenic nature produces exceptionally high signal-to-noise ratio
- Very bright fluorescent signal
- Light-up aptamers are small RNA tags, thus have a lower propensity to interfere with cellular functions
- They enable direct, fast measurement of gene transcription at the RNA level, providing a more accurate real time observation of RNA localization and promoter activity; GFP can take up to 30 minutes after stimulation to be translated into protein.

Examples of Light-up Aptamer Applications. A) Monitoring gene expression: RNA with a light-up aptamer (light blue structure) coded is expressed, a fluorogen (orange pentagon) binds and becomes highly fluorescent. B) Metabolite sensor or riboswitch: a metabolite (green heptagon) binds an aptamer, stabilizing the light-up aptamer conformation, allowing the fluorogen to bind. Fluorogen becomes highly fluorescent. C) RNA sensor: RNA binds and stabilizes the light-up aptamer conformation, allowing the fluorogen to bind. Fluorogen becomes highly fluorescent. Image adapted from Neubacher and Hennig (2019). PMID: 0102012

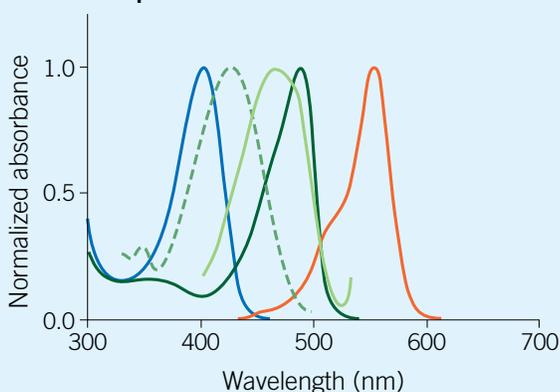
Learn more at tocris.com/aptamer-based-rna-imaging

CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
FLUORESCENT PROBES FOR IMAGING BACTERIA			
6647	HADA	Blue fluorescent d-amino acid for labeling peptidoglycans in live bacteria	5 mg
6648	NADA-green	Fluorescent d-amino acid for labeling peptidoglycans in live bacteria	5 mg
6649	RADA	Orange-red TAMRA-based fluorescent d-amino acid for labeling peptidoglycans in live bacteria	5 mg
6659	sBADA	Green fluorescent d-amino acid for labeling peptidoglycans in bacteria	2 mg
6802	6 TMR Tre	Fluorescent trehalose; selectively labels mycobacterial cell envelope	2 mg
6650	YADA	Green-yellow lucifer yellow-based fluorescent d-amino acid for labeling peptidoglycans in live bacteria	5 mg

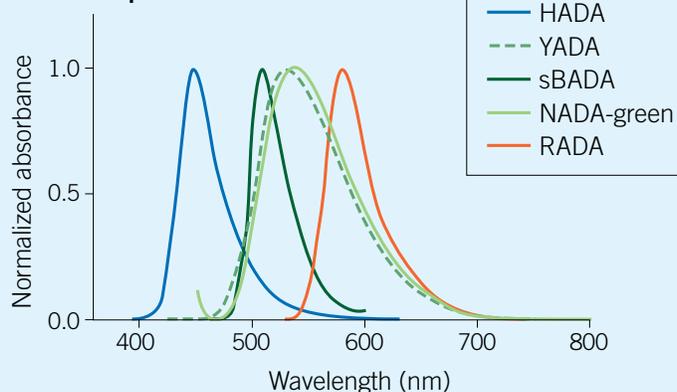
FDAAs PROBES FOR IMAGING BACTERIA

Fluorescent probes for imaging bacteria are useful for advancing bacterial research and antibiotic design. Fluorescent D-amino acids (FDAAs) are an essential tool for studying peptidoglycan synthesis and dynamics, and our range now spans the visible light spectrum giving you more options for multiplexing. FDAAs efficiently label peptidoglycans in bacterial cell walls in situ, allowing you to investigate and visualise cell morphology and formation, as well as bacterial growth. They can be used in gram-negative and gram-positive bacteria, and they are suitable for use with super-resolution microscopy (SRM).

Excitation spectra



Emission spectra



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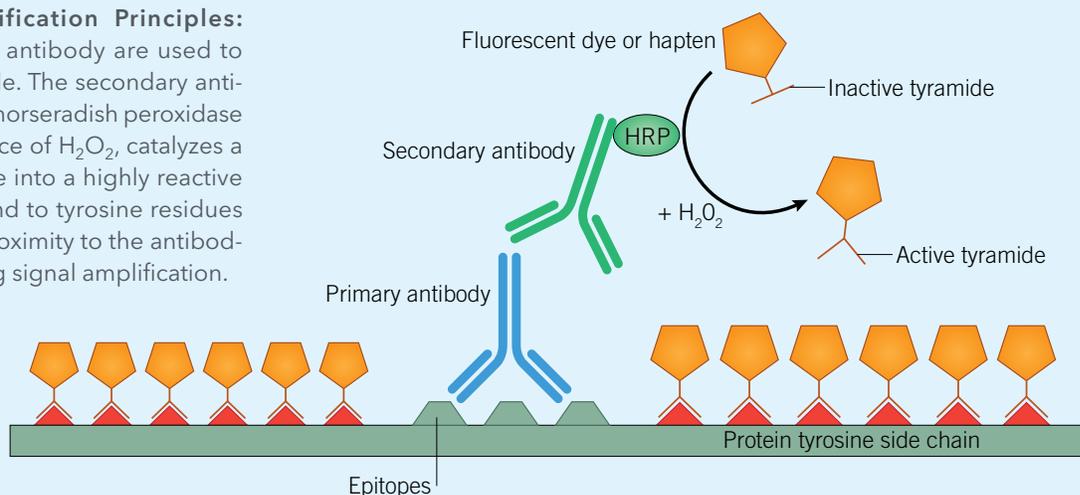
CAT.NO.	PRODUCT NAME	DESCRIPTION	UNIT SIZE
TYRAMIDE SIGNAL AMPLIFICATION (TSA) REAGENTS			
6241	Biotinyl Tyramide	Reagent widely used for signal amplification in IHC and FISH	25 mg
6457	Cyanine 3 Tyramide	Orange fluorescent reagent widely used for signal amplification in IHC and FISH	1 mg
6458	Cyanine 5 Tyramide	Red fluorescent reagent widely used for signal amplification in IHC and FISH	1 mg
6456	Fluorescein Tyramide	Green fluorescent reagent widely used for signal amplification in IHC and FISH	1 mg

TSA REAGENTS FOR ENHANCING IHC, ICC & FISH SIGNALS

Tyramide Signal Amplification (TSA), also known as Catalyzed Reported Deposition (CARD), offers an effective way to efficiently enhance signal and detection capabilities for low-abundance targets in immunocytochemistry (ICC), immunohistochemistry (IHC), and *in situ* hybridization (ISH) applications.

Tyramide Signal Amplification Principles:

A primary and secondary antibody are used to label a tissue or cell sample. The secondary antibody is pre-conjugated to horseradish peroxidase (HRP), which in the presence of H_2O_2 , catalyzes a labeled tyramide substrate into a highly reactive species that covalently bind to tyrosine residues on the proteins in close proximity to the antibodies and HRP, thus providing signal amplification.



Key Features of Tyramide Signal Amplification:

- Allows detection of low-abundance targets
- Used to enhance signals in IHC, ICC and FISH
- Reduces the amount of primary antibody required
- 100-fold more sensitive than conventional methods
- Simple, flexible, and easy to incorporate into IHC, IHC and FISH workflows
- Compatible with fluorescent multiplex systems

Find out how our customers have used and what they think of our 5 Star TSA product Biotinyl Tyramide, as they share experimental details and images of their results at: [tocris.com/tsa](https://www.tocris.com/tsa)

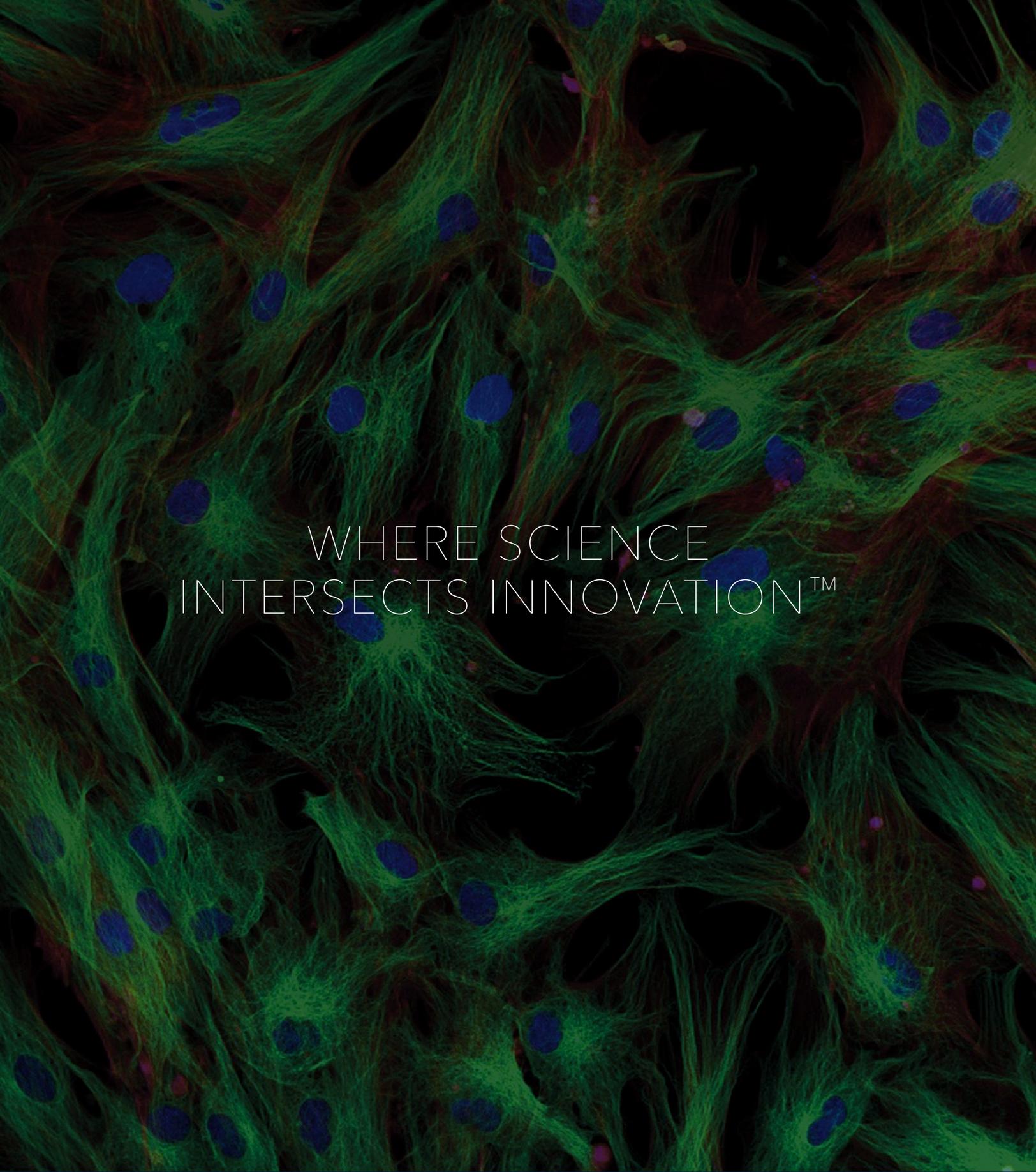


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