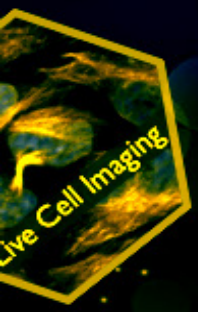
The Protein Experts

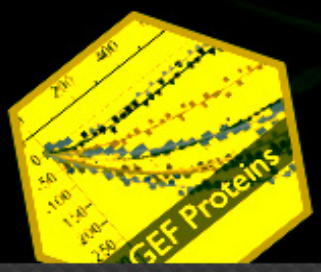
Cytoskeleton, Inc.

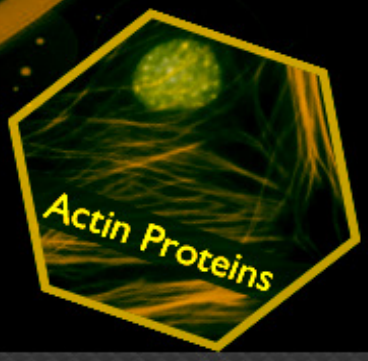
Cytoskeleton, Inc.
Minicatalog 2024

Simplifying the Complex

Actin Proteins
Tubulin Reagents
Small G-protein tools
Signal-Seeker™ PTM Kits
G-LISA™ Activation Assays
Pull-down Activation Assays
GO-Blot™ V2 WB Processor
Spirochrome™ Bioprobes
MemGlow™ PM Probes
Custom Services
Motor Proteins







Supporting the Scientific Commmunity for Over 30 Years

New Products Inside!
Ubiquitination Detection Tools
Purified Motor Proteins

100% powered by wind and solar.
75% waste recycled

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Community Spotlight

At Cytoskeleton, we recognize the importance of our customers not only as scientists, but as a community of people working together towards a common goal: discovering new aspects of biology and providing a framework for understanding disease at the molecular and cellular levels. Conferences, events, and meetings are vital to creating this collaborative network of knowledge. Cytoskeleton is proud to sponsor and attend events across the globe in support of our community. We hope to see you out there in 2024!

GO-Blot V2

Scan to Learn More!

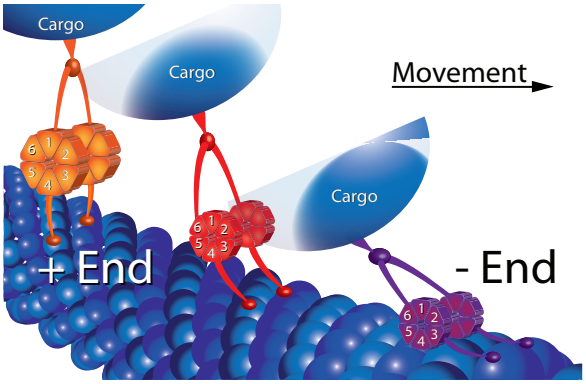
The GO-Blot™ V2 Western Blot Processor is a reliable fluid delivery device for reproducibly probing blots and membranes with primary and secondary antibodies.

Ubiquitination Detection Kits

- Comprehensive kits - affinity & control beads, de-PTM inhibitors, validation antibody, lysis & wash buffers, etc.
- Measure endogenous signaling events.
- Analyze with western blots.

See p. 4-5 for more information

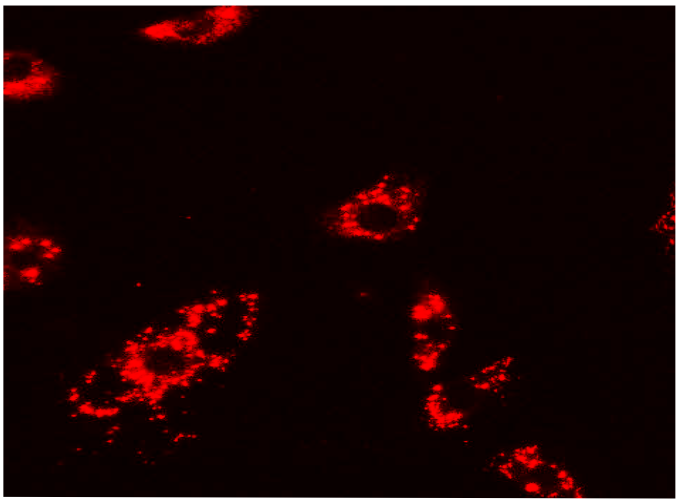
Kinesin motors for screening and drug discovery



CENP-E Motor Domain Protein - (Cat. # CP01)
Chromokinesin Motor Domain Protein - (Cat. # CR01)
Eg5 Motor Domain Protein - (Cat. # EG01)
MCAK Motor Domain Protein - (Cat. # MK01)
MKLP1 Motor Domain Protein - (Cat. # MP01)
MKLP2 Motor Domain Protein - (Cat. CS-MP05)
KIF22 Motor Domain Protein - (Cat. # CS-KF02)
KIF18A Motor Domain Protein - (Cat. # CS-KF18)

See p. 7 for more information

LipiBright Lipid Droplet Probes



- Bright, fluorogenic live cell dyes that stain lipid droplets
- LipiBright probes are photostable and possess narrow absorption and emission bands; thus, multicolor imaging is possible.
- These probes exhibit ideal characteristics for microscopy and have been validated with multiple techniques including epifluorescent (widefield), confocal, and two photon.

See p. 9 for more information

Subscribe to our emails and check cytoskeleton.com to learn more!

Signal-Seeker™ ToolKits

Novel Post-translational Modification Tools

- First to develop comprehensive PTM detection kits to simplify investigation for non-PTM experts.
- First to develop a universal lysis system which allows for the investigation of PTM crosstalk.
- First to develop a simple, genomic DNA removal filter that removes rather than shears DNA.
- First to develop a commercially availabe UBD that effectively enriches mono- and poly-ubiquitinated proteins.
- First to develop an acetylation antibody that visualizes acetylated mitochondria by immunofluorescence.

Uses in Molecular Biology

- Use different kits to build a temporal protein regulation profile.
- Investigate the role of known protein modifications in your system.
- Detect endogenous levels (vs. transfected amounts) of modified proteins.

Protein regulation during signal transduction and other cellular events is, by necessity, a rapid and dynamic process. Most often, these mechanisms involve modification of an extremely small, but important fraction of the target protein. This makes the scientist's job of capturing key PTM regulatory processes difficult and frustrating.

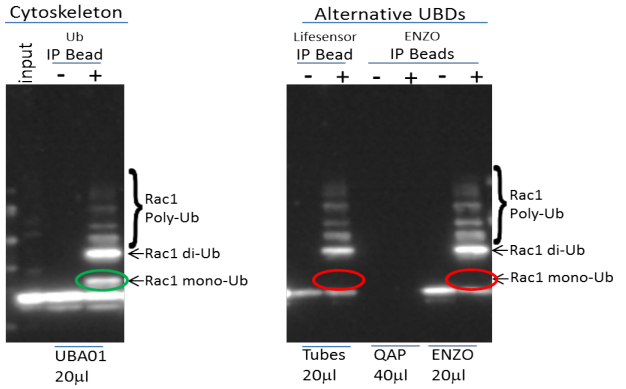
At Cytoskeleton, we have focused on generating accurate methods to measure these small, endogneous changes; because it is critical to determine if these PTM events are occuring physiologically.

Be The First To Discover Mono- And Poly-Ubiquitination Of Your Protein

The only commercially available UBD that effectively enriches mono- and poly-ubiquitinated proteins

No heavy and light chain interfence, which occurs with antibody enrichment

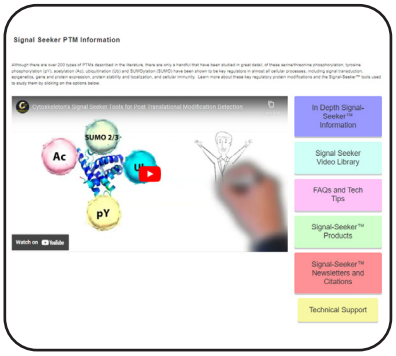
Learn more at: https://www.cytoskeleton.com/uba01-beads

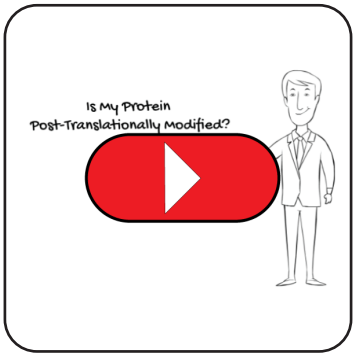


Legend: Ubiquitin affinity beads (Cat. # UBA01-beads) were used to precipitate ubquitinated proteins from A431 cell extracts. Products were run on 4-20% SDS-PAGE and transfered to a PVDF membrane for western analysis using anti-Rac1 (Rac1 is an example protein), and anti-mouse HRP secondary.

A Treasure Trove of PTM Resources and Information

Cytoskeleton has prepared a wealth of material to assist with your PTM research. From regular newsletters, tech tips, and videos Cytoskeleton.com is a great place to learn about PTMs and how our Signal-Seeker Tools can assist in your PTM discovery. Visit https://www.cytoskeleton.com/signal-seeker-information-resources to start learning.





SUMOylation 1 Products

Description	Amount	Cat. #
Signal-Seeker™ SUMO1 Detection Kit	30 assays	BK165
Signal-Seeker™ SUMO1 Detection Kit	10 assays	BK165-S
SUMO1 Affinity Beads	30 assays	ASM11-beads
SUMO1 Control Beads	10 assays	CIG03-beads
SUMO1 Mouse Antibody (5D8B16)	1 x 100 µl	ASM01

SUMOylation 2/3 Products

Description	Amount	Cat. #
Signal-Seeker™ SUMO 2/3 Detection Kit	30 assays	BK162
Signal-Seeker™ SUMO 2/3 Detection Kit	10 assays	BK162-S
SUMO 2/3 Affinity Beads	20 assays	ASM24-beads
Mouse IgG Control	10 assays	CIG01-beads
SUMO 2/3 Mouse Antibody (12F3)	2 x 100 µl	ASM23
SUMO 2/3 Mouse Antibody (11G2)	2 x 200 µl	ASM24
SUMO 2/3 Mouse Antibody-HRP labeled	1 x 100 µl	ASM23-HRP

Phosphotyrosine Products

Description	Amount	Cat. #
Signal-Seeker™ Phosphotyrosine Detection Kit	30 assays	BK160
Signal-Seeker™ Phosphotyrosine Detection Kit	10 assays	BK160-S
Phosphotyrosine Affinity Beads	40 assays	APY03-beads
Mouse IgG Control	10 assays	CIG01-beads
Phosphotyrosine Mouse Antibody (11G2)	2 x 100 µl	APY03
Phosphotyrosine Antibody-HRP labeled	1 x 100 µl	APY03-HRP

Acetyl-Lysine Products

Description	Amount	Cat. #
Signal-Seeker™ Acetyl-Lysine Detection Kit	30 assays	BK163
Signal-Seeker™ Acetyl-Lysine Detection Kit	10 assays	BK163-S
Acetyl-Lysine Affinity Beads	40 assays	AAC04-beads
Acetyl-Lysine Control Beads	10 assays	CIG02-beads
Acetyl-Lysine Mouse Antibody (3C6.08.20)	1 x 200 µl	AAC01
Acetyl-Lysine Mouse Antibody (7B5A1)	2 x 100 µl	AAC02
Acetyl-Lysine Mouse Antibody (19C4B2.1)	2 x 100 µl	AAC03
Acetyl-Lysine Mouse Antibody-HRP labeled	1 x 100 µl	AAC03-HRP

Ubiquitin Products

Description	Amount	Cat. #
Signal-Seeker™ Ubiquitination Detection Kit	30 assays	BK161
Signal-Seeker™ Ubiquitination Detection Kit	10 assays	BK161-S
Ubiquitination Affinity Beads	40 assays	UBA01-beads
Ubiquitination Control beads	10 assays	CUB02-beads
Ubiquitin Mouse Antibody	2 x 100 µl	AUB01
Ubiquitin Mouse Antibody-HRP labeled	1 x 100 µl	AUB01-HRP

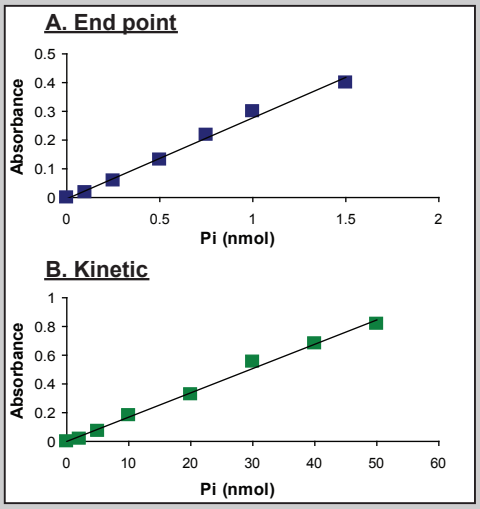
BlastR™ Lysis System

Description	Amount	Cat. #
BlastR™ Rapid Lysate Filter System	50 assays	BLR01
BlastR™ Rapid Lysate Filters	50 assays	BLR02
BlastR™ Lysis/Dilution Buffer Kit	50 lyses	BLR03

ATPase, GTPase, & Phosphatase Biochem Kits™

ATPases, GTPases, and other phosphatases liberate inorganic phosphate (P_i) from their respective triphosphate nucleotide or substrate. BK051-BK054 are suitable for HTS applications. BK051-BK054 and BK060 measure free phosphate via binding to a reporter dye or by enzymatic conversion into a reporter molecule. BK053 and BK054 are end-point assays suitable for measuring microtubule-induced kinesin ATPase or F-actin-induced myosin ATPase activity. BK051, BK052 and BK060 are kinetic assays, thus suitable for Vmax or Kcat determinations. These kits require a higher level activity ATPase or GTPase for sufficient sensitivity. BK060 is specialized for kinesins.

Phosphate Quantitation Biochem Kits™	Cat. #	Amount
ATPase ELIPA™ (enzyme-linked, colorimetric) Kinetic quantitation of ATP hydrolysis (Kcat 0.05 to >1.0)	BK051/052	96 assays
CytoPhos™ Phosphate Assay (endpoint assay) Colorimetric assay for ATPases & GTPases (Kcat 0.01 to >1.0)	BK054	1000 assays
GTPase ELIPA™ (enzyme-linked, colorimetric) Kinetic quantitation of GTP hydrolysis (Kcat 0.05 to >1.0)	BK051/052	96 assays
Kinesin ELIPA™ Biochem Kit For real time kinetic and Vmax kinesin ATPase measurements	BK060	96 assays
Kinesin ATPase Endpoint Assay For endpoint measurement of kinesin ATPase activity	BK053	1000 assays
Purine Nucleoside Phosphorylase protein Catalyzes the transfer of phosphate to MSEG reporter	ELP03	96 assays

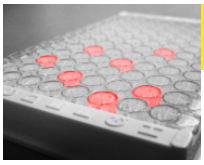


Comparison of standard curves of Cytoskeleton's endpoint (BK053 and BK054) and kinetic (BK051/52 and BK060) phosphate assays. Endpoint assays have a linear response between 0.1 and 1.5 nmol Pi. Kinetic assays give a linear response between 2 and 50 nmol Pi.

Custom Services

About Custom Services

Like our product offerings, the Custom Services department emphasizes quality products and services. We also understand ***accuracy*** and ***timeliness*** are critical elements for a successful project. The process starts with an experienced scientist asking for ***specifications and success factors*** for your project. Within 24 hours, the quotation will arrive and work can start at the next available schedule date. Regular updates are provided until project completion. Once complete, we continue support through timely citation-based advice and practical experience. Choose from over forty defined modules (full list is available online).



Compound or Gene Screening

Identify target and assay
e.g. tissue culture or in vitro protein assay, fluorescence or optical density, domain or full length protein.

↓

Schedule and initiate project

↓

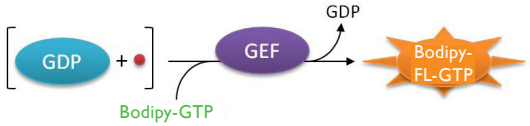
Report weekly progress

↓

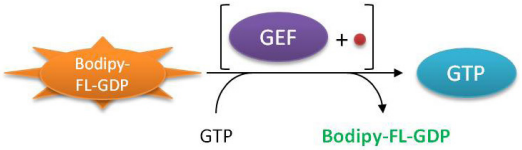
Deliver certified report
e.g. analysis and dose response data .

Examples of GTPase Exchange Factor assays

1. In vitro GTP association



2. In vitro GDP dissociation



3. Tissue culture

Choose GEF or GAP DNA

↓

Transfect

↓

Culture +/- compound

↓

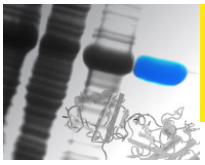
Extract protein

↓

Measure GTPase activity of specific small G-protein.

Other examples: Kinesin, Dynein and Myosin assays

1. In vitro ATPase; myosin plus thin filament complex.
   Use myosins from heart tissue to identify compounds that alter calcium induced ATPase of myosin on thin filaments.
2. In vitro ATPase; kinesin plus microtubules.
   Use purified kinesins that are important in tumor cells to identify compounds that inhibit cancer cell movement or division.
3. In vitro ATPase; dynein plus microtubules.
   Use dynein isolated from neuronal tissue to identify compounds that increase dynein activity as a way to improve the outcome of dementia diseases.



Protein Purification with Validated Purity and Activity Testing

Success Factors for project
e.g. purity, cited activity, timeline.

↓

Schedule and initiate project

↓

Report weekly progress

↓

Deliver stabilized protein
e.g. lyophilized for one year stability .

Many satisfied customers, including:
Novartis, Merck, Biokinesis, Amgen, Bayer Cropsciences, Alcon, Frost Biologic, Cullinan Pharmaceuticals, Sigma-Clermont Institute, Imperial Cancer Research Institute, and many other diagnostic companies requiring active protein targets!

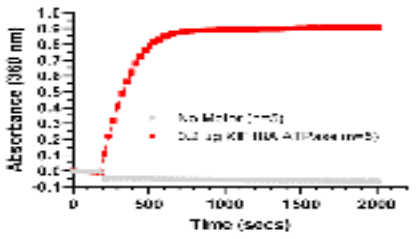
Example purified proteins:

Ras Small-G Proteins	Motor Proteins
K-Ras4B Protein, hu. rec., wild-type (Cat. # RS03)	MKLP2 kinesin like protein (Cat. # CS-KF51)
K-Ras4B Protein, hu. rec., G12V mutant (Cat. # RS04)	Dynein neuronal tissue (Cat. CS-DN01)
K-Ras4B Protein, hu. rec., other mutants (inquire)	S1 myosin, cardiac tissue (Cat. # CS-MYS03)
R-Ras Protein, hu. rec., wild type (Cat. # RS05)	S1 myosin, smooth muscle (Cat. # CS-MYS05
H-Ras Protein, hu. rec., wild-type (Cat. # RS01)	S1 myosin, skeletal muscle (Cat. # CS-MYS04
GEF Proteins	Thin filament complex cardiac (Cat. # TFC01)
SOS1 Exchange Factor (Cat. # CS-GE02)	Thin filament complex skeletal (Cat. # TFC02)
Tiam1 (Rac GTP) Exchange Factor (Cat. # CS-GE04)	Heavy meromyosin cardiac tissue (Cat. # MH03)
av2 (Rac GTP) Exchange Factor (Cat. # CS-GE06)	NEW Fascin-1 Protein: Wild-Type(Cat. CS-FSC01)

NEW KIF18A Motor Domain (1-374) His-Protein: Wild-Type (Human Recombinant) (Cat # CS-KF18)

Product Uses:

- Measurement of microtubule-activated ATPase assays
- Identification/characterization of proteins or small molecules that affect motor ATPase activity.
- Identification/characterization of proteins or small molecules that affect motor/microtubule interactions.



Legend: KIF18A microtubule ATPase activity determined with Kinesin ELIPA Kit (Cat#. BK060)

For more information about Protein Purification Services please visit www.cytoskeleton.com/custom-services
or email tservice@cytoskeleton.com

Figure 1: Schematic diagram of dynein pulling cargo along a microtubule.

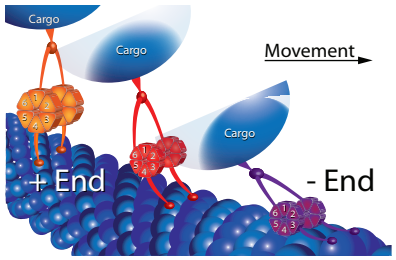


Figure 2: Dose response curve of Ciliobrevin A inhibiting cytoplasmic dynein.

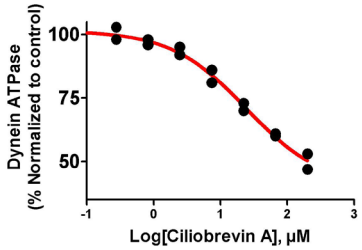


Figure 1: Schematic representation of proposed dynein torsion gear mechanism and microtubule (MT) catch-bonding. The six member ring of the cytoplasmic dynein complex's (CDC) motor domain is shown in a relaxed state in orange and during high load conditions the ring is compressed as shown by the red model. During very high load conditions, CDC's microtubule binding domain clamps down onto the MT as shown by the purple model.

Figure 2: Dynein (Cat. # DN01) is available from Cytoskeleton as a purified complex that has microtubule stimulated ATPase activity which is inhibited by Ciliobrevin A with an IC_{50} of 30 µM, which is similar to Firestone et al. (2012, Fig. 4).

Figure 3: Schematic diagram of muscle acto-myosin filament.

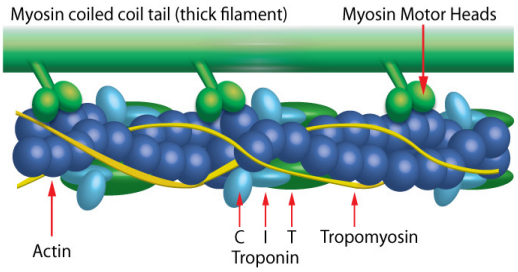


Figure 4: Calcium induced ATPase activity from a reconstituted acto-myosin filament.

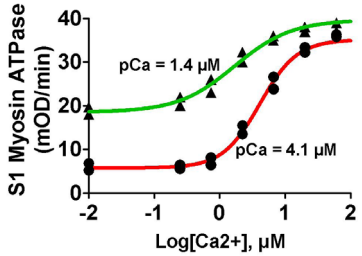


Figure 3: Actin thin filament protein (Cat. # TFC01) was mixed with S1-myosin (Cat. # MYS03) to re-create the acto-myosin filament *in vitro*. Calcium was titrated between 0.2 and 60 µM and ATPase rate was measured kinetically at OD_{360nm} using the components of the ATPase ELIPA Kit (Cat. # BK051, pg. 18). The concentration of calcium was plotted against the rate of ATPase activity to produce the dose response curves. Red line denotes the control with a pCa = 4.1 µM which is similar to published pCa values for reconstituted cardiac sarcomeres decribed in Holroyde et al. (1980, Fig. 6). This system is responsive to compounds that bind to the myosin motor domain, e.g. Omecavit mercarbil with a modified pCa = 1.4 µM (green line), and hence it can be used as a screening tool to develop new cardiac therapeutic drugs.

Myosin & Thin Filament Proteins

Myosin Proteins	Source	Purity	Cat. #	Amount
Myosin S1 fragment (cardiac)	Bovine	>85%	CS-MYS03	1 x 250 µg
Myosin S1 fragment (skeletal)	Rabbit	>85%	CS-MYS04	1 x 250 µg
Myosin S1 fragment (smooth)	Chicken	>85%	CS-MYS05	1 x 250 µg
Myosin II Skeletal Muscle Protein	Rabbit	>95%	MY02-A MY02-B	5 x 1 mg 20 x 1 mg
Myosin Cardiac Muscle Protein	Bovine	>95%	MY03-A MY03-B	5 x 1 mg 20 x 1 mg
Heavy Meromyosin Skeletal Muscle Protein	Rabbit	80%	MH01-A	4 x 50 µg
Heavy Meromyosin Cardiac Muscle Protein	Bovine	80%	CS-MH03	1 x 100 µg
Pre-formed F-actin filaments	Rabbit	>99%	AKF99-A AKF99-B	1 x 1 mg 5 x 1 mg
Actin Thin Filaments (cardiac) Calcium sensitive complex of F-actin, tropomyosin α/β & Troponin C,I,T	Bovine	>90%	TFC01	1 x 1 mg
Actin Thin Filaments (skeletal) Calcium sensitive complex of F-actin, tropomyosin α/β & Troponin C,I,T	Rabbit	>90%	CS-TFC02	1 x 1 mg
Tropomyosin / Troponin Complex Cardiac tropomyosin α/β & Troponin C,I,T	Bovine	>60%	CS-TT05	1 x 1mg

Pre-formed Microtubules & F-Actin Reagents

Microtubules and Other Reagents	Cat. #	Amount
Thin Filament Protein (cardiac tropomyosin/tropomodulin/actin, Ca^{2+} activated myosin ATPase	TFC01	1 x 1 mg
Thin Filament Protein (skeletal mus. tropomyosin/tropomodulin/actin, Ca^{2+} activated myosin ATPase	CS-TFC02	1 x 1 mg
Microtubules, Pre-formed, lyophilized, porcine source, substrate for kinesin ATPase assays	MT002-A MT002-XL	4 x 500 µg 1 x 10 mg
Actin Filaments, Pre-formed, lyophilized A ready to use substrate for myosin ATPase assays	AKF99-A AKF99-B	1 x 1 mg 5 x 1 mg
Paclitaxel (2 mM) Stabilizes microtubules	TXD01	10 x 100 µl

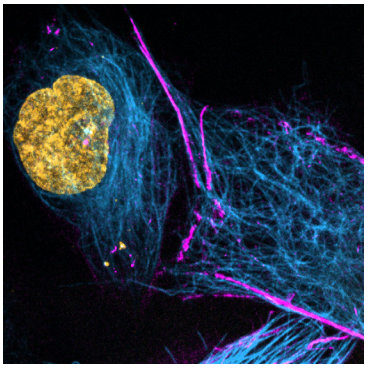
Kinesin & Dynein Proteins

	Kinesin & Dynein Proteins	Source	Purity	Cat. #	Amount
	CENP-E Motor Domain Protein	H. *sapiens*	>85%	CP01-A CP01-XL	2 x 25 µg 1 x 1 mg
	Chromokinesin Motor Domain Protein	H. *sapiens*	>85%	CR01-A	2 x 25 µg
	Dynein (cytoplasmic)	Porcine brain	>80%	CS-DN01	1 x 50 µg
	Eg5 Motor Domain Protein	H. *sapiens*	>85%	EG01-A EG01-B EG01-XL	2 x 25 µg 10 x 25 µg 1 x 1 mg
	Eg5 Homolog BimC Motor Domain Protein	A. *nidulans*	>85%	BM01-A	2 x 25 µg
	Eg5 Homolog BimC Motor Domain Protein	A. *fumigatus*	>85%	EG02-A	2 x 15 µg
	KIFC3 Motor Domain Protein	H. *sapiens*	>85%	KC01-A	2 x 25 µg
	KIF3C Motor Domain Protein	H. *sapiens*	>85%	KF01-A	2 x 25 µg
	KIF7 motor domain	H. *sapiens*	>85%	CS-KF51	1 x 100 µg
	Kinesin Heavy Chain Motor Domain Protein	H. *sapiens*	>85%	KR01-A KR01-XL	2 x 25 µg 1 x 1 mg
	MCAK Motor Domain Protein	H. *sapiens*	>85%	MK01-A	2 x 25 µg
	MKLP1 Motor Domain Protein	H. *sapiens*	>85%	MP01-A MP01-XL	2 x 25 µg 1 x 1 mg
	MKLP2 Motor Domain Protein	H. *sapiens*	>85%	CS-MP05	1 x 50 µg
NEW	**KIF22 Motor Domain (5-378) His-Protein: wild-type**	H. *sapiens*	90%	CS-KF02	1 x 100 µg
NEW	**KIF18A Motor Domain (1-374) His-Protein: wild-type**	H. *sapiens*	80%	CS-KF18	1 x 100 µg
NEW	**KIF7 Motor Domain Protein**	H. *sapiens*	>80%	CS-KF51	1 x 100 µg

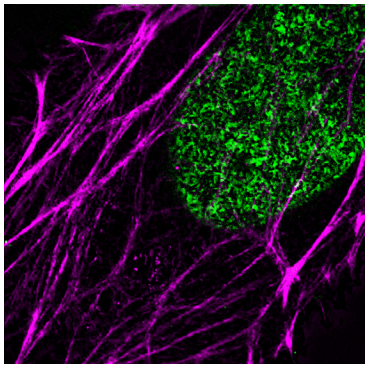
Live Cell Imaging Reagents

Spirochrome's New SPY probes - *Advantages*:

- Increased cell membrane permeability
- Verapamil no longer needed for consistent staining
- Improved compatibility across more cell lines
- Less cytotoxic than SiR probes
- Increased spectra range: FITC, TRITC, and Texas Red



Left : 93X STED-imaged HeLa cell labeled with SPY555-actin (magenta), SPY595-DNA (orange),and SPY650-tubulin (blue). Image provided courtesy of Spirochrome.



Right : 93X STED-imaged HeLa cell labeled with SPY505-DNA (green) and SPY555-actin (magenta). Image provided courtesy of Spirochrome.

Small G-protein Modulators and Actin Imaging

Description	Ex / Em	Cat. #	Amount
SiR700-Actin Kit Includes SiR-Actin and Verapamil	690 / 720 nm	CY-SC013	35 nmol
SiR-Actin Kit Includes SiR-Actin and Verapamil	630 / 680 nm	CY-SC001	50 nmol
SPY555-Actin Includes SPY555-Actin Probe	555 / 580 nm	CY-SC202	100 Stains
SPY620-Actin Includes SPY620-Actin Probe	619 / 636 nm	CY-SC402	100 Stains
Rhodamine Actin Protein Human platelet, non-muscle	535 / 590 nm	APHR-A APHR-C	4 x 10 µg 20 x 10 µg
Rhodamine Actin protein Rabbit skeletal muscle	535 / 590 nm	AR05-B AR05-C	10 x 20 µg 20 x 20 µg
Rho Activator II Deamidation of Rho Gln-63		CN03-A CN03-B	3 x 20 µg 9 x 20 µg
Rho Inhibitor I ADP ribosylation of Rho Asn-41		CT04-A CT04-B CT04-C	1 x 20 µg 5 x 20 µg 20 x 20 µg
Rho/Rac/Cdc42 Activator I Deamidation of Rho Gln-63 & Rac/Cdc42 Gln-61		CN04-A CN04-B	3 x 20 µg 9 x 20 µg
Rho Activator I SHP-2 phosphatase-mediated Rho activation		CN01-A CN01-B	5 x 10 units 20 x 10 units
Rac/Cdc42 Activator II EGF receptor-mediated Rac/Cdc42 activation		CN02-A CN02-B	5 x 10 units 20 x 10 units

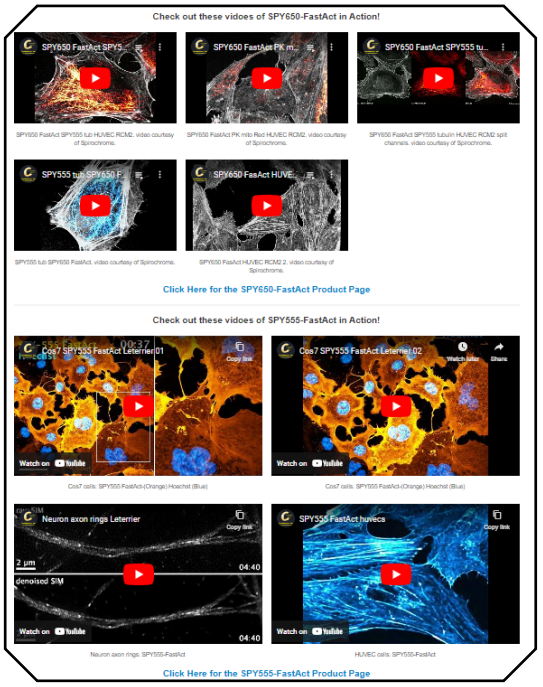
ECM Imaging

Description	Ex / Em	Cat. #	Amount
Fibronectin Red fluorescent, rhodamine	535 / 590 nm	FNR01-A FNR01-B	5 x 20 µg 20 x 20 µg
Fibronectin Green fluorescent, HiLyte Fluor™ 488	460 / 520 nm	FNR02-A FNR02-B	5 x 20 µg 20 x 20 µg
Laminin Red fluorescent, rhodamine	535 / 590 nm	LMN01-A LMN01-B	5 x 20 µg 20 x 20 µg
Laminin Green fluorescent, HiLyte Fluor™ 488	460 / 520 nm	LMN02-A LMN02-B	5 x 20 µg 20 x 20 µg

Spirochrome's Newest Generation Probe Is Here!

SPY650-FastAct™ Dynamic Actin Labeling

SPY650-FastAct™ is a bright, far red, fluorogenic & non toxic F-actin stain based on our SPY™ dyes series. Its optimized structure allows to label F-actin in live cells with high specificity and low background. The unique and unmatched feature of SPY650-FastAct™ is its ability to label very fast actin dynamics. The probe does not require any genetic manipulation, transfection or overexpression of fluorescent proteins.



Cytoskeleton has prepared a series of videos which display the dynamic actin labeling potential of the FastAct™ probes. You can view these videos at https://www.cytoskeleton.com/fastactvideogallery. There is also a collection of videos showing Spirochrome's other probes in action at https://www.cytoskeleton.com/spirochrome-gallery.

NEW SPY-FastAct™ Dynamic Actin Labeling

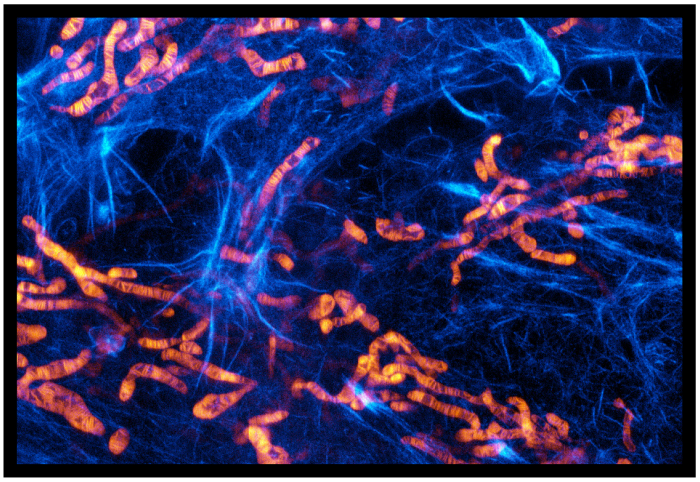
Description	Ex / Em	Cat. #	Amount
SPY555-FastAct™ Dynamic Actin Labeling Probe	555/580	CY-SC205	50 nmol
SPY650-FastAct™ Dynamic Actin Labeling Probe	652/674	CY-SC505	50 nmol
SPY700-FastAct™ Dynamic Actin Labeling Probe	696/718	CY-SC605	50 nmol

DNA Imaging

Description	Ex / Em	Cat. #	Amount
SiR-DNA Kit Includes SiR-DNA and Verapamil	630 / 680 nm	CY-SC007	50 nmol
SiR700-DNA Kit Includes SiR700-DNA and Verapamil	690 / 720 nm	CY-SC015	35 nmol
SPY505-DNA Includes SPY505-DNA Probe	512 / 531 nm	CY-SC101	100 stains
SPY555-DNA Includes SPY555-DNA Probe	555 / 580 nm	CY-SC201	100 stains
SPY595-DNA Includes SPY595-DNA Probe	599 / 615 nm	CY-SC301	100 stains
SPY620-DNA Includes SPY620-DNA Probe	619 / 636 nm	CY-SC401	100 stains
SPY650-DNA Includes SPY650-DNA Probe	652 / 674 nm	CY-SC501	100 stains
SPY700-DNA Includes SPY700-DNA Probe	696 / 718 nm	CY-SC601	100 stains

Spirochrome: PKmito™ Probes

We are proud to announce that the PKmito™ probes for gentle imaging of mitochondria in live cells have been developed and published by the lab of Zhixing Chen from Peking University. They were carefully designed to reduce the generation of reactive oxygen species during imaging and allow long-term imaging or timelapse STED imaging in live cells.



Cell Stained with PKmito Orange

NEW PKmito - Mitochondria Imaging

Product	Ex/Em	Cat. #	Amount
PKmito DEEP RED	644/670nm	CY-SC055	100 stains
PKmito ORANGE	591/608 nm	CY-SC053	100 stains
PKmito RED	549/569 nm	CY-SC052	100 stains

Membrane Sensor - Imaging Probes

Description	Ex / Em	Cat. #	Amount
ER Flipper-TR Kit For fluorescence cell membrane microscopy	480/600	CY-SC021	50 nmol
Flipper-TR Kit For fluorescence cell membrane microscopy	480/600	CY-SC020	50 nmol
Mito Flipper-TR Kit For fluorescence cell membrane microscopy	480/600	CY-SC023	50 nmol

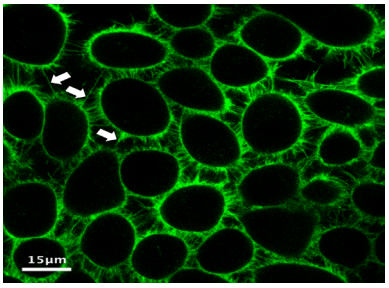
Tubulin Imaging

Description	Ex / Em	Cat. #	Amount
SiR700-Tubulin Kit Includes SiR700-Tubulin and Verapamil	690 / 720 nm	CY-SC014	35 nmol
SiR-Tubulin Kit Includes SiR-Tubulin and Verapamil	630 / 680 nm	CY-SC002	50 nmol
SPY555-Tubulin Includes SPY555-Tubulin Probe	555 / 580 nm	CY-SC203	100 stains
SPY650-Tubulin Includes SPY650-Tubulin Probe	652 / 674 nm	CY-SC503	100 stains
AMCA Labeled Tubulin	350 / 440 nm	TL440M-A TL440M-B	5 x 20 µg 20 x 20 µg
HiLyte Fluor™ 488 Labeled Tubulin	460 / 520 nm	TL488M-A TL488M-B	5 x 20 µg 20 x 20 µg
TRITC Rhodamine Labeled Tubulin	535 / 590 nm	TL590M-A TL590M-B	5 x 20 µg 20 x 20 µg
X-Rhodamine Labeled Tubulin	560 / 620 nm	TL620M-A TL620M-B	5 x 20 µg 20 x 20 µg
HiLyte Fluor™ 647 Labeled Tubulin	620 / 670 nm	TL670M-A TL670M-B	5 x 20 µg 20 x 20 µg

MemGlow™ Plasma Membrane Probes for Bioimaging

Features and advantages of MemGlow™ probes:

- Bright: efficient labeling of filopodia and nanotube at nanomolar concentrations
- Fluorogenic: Utilize cyanine or BODIPY dyes with zwitterionic membrane anchor groups
- Non-toxic: does not alter biological sample, while permitting long-term imaging
- Simple staining protocol: compatible with live cells, fixed cells, and tissue



The plasma membrane of live KB cells labeled with 20 nM MemGlow™ 488 and imaged with laser scanning confocal microscopy. Intercellular filopodia and nanotubes are visible between cells throughout (white arrows). Image provided courtesy of Mayeul Collot et al, CNRS, Paris, France.

MemGlow™ Probes

Product	Cat. #	Amount
MemGlow™ 488 Fluorogenic Membrane Probe	MG01-02 MG01-10	2 nmol 10 nmol
MemGlow™ 560 Fluorogenic Membrane Probe	MG02-02 MG02-10	2 nmol 10 nmol
MemGlow™ 590 Fluorogenic Membrane Probe	MG03-02 MG03-10	2 nmol 10 nmol
MemGlow™ 640 Fluorogenic Membrane Probe	MG04-02 MG04-10	2 nmol 10 nmol
MemGlow™ 700 Fluorogenic Membrane Probe	MG05-02 MG05-10	2 nmol 10 nmol

MemGlow™ Nile Red Polarity Probes

Product	Cat. #	Amount
NR4A Membrane Polarity Probe	MG06	2 nmol
NR12A Membrane Polarity Probe	MG07	4 nmol
NR12S Membrane Polarity Probe	MG08	4 nmol

LipiBright™ Fluorogenic Lipid Droplet Probes

Cytoskeleton is proud to announce the release of three new, bright fluorogenic probes to visualize lipid droplets. LipiBright™ live cell probes fluoresce 300 to 1000 times brighter in an oily/lipid environment compared to aqueous solutions and effectively label lipid droplets.

Advantages:
1. LipiBright probes are photostable and possess narrow absorption and emission bands, a distinct advantage over the traditional Nile Red probe; thus, multicolor imaging is possible.

2. These probes exhibit ideal characteristics for microscopy and have been validated with multiple techniques including epifluorescent (widefield), confocal, and two photon.

NEW LipiBright™ Probes

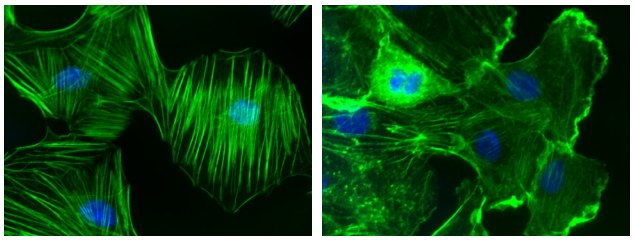
Product	Cat #	Amount
LipiBright™ 530 SMCy3.5	MG11	70 nmol
LipiBright™ 650 SMCy5.5	MG12	70 nmol
LipiBright™ 740 SMCy7.0	MG13	70 nmol

Activation Assays

About Activation Assays

Since 2001, Cytoskeleton has provided the scientific community with the most robust, accurate, and time-saving kits to measure Small GTP-binding protein (SmG) activation. Along the way, we have developed numerous versions for different SmGs, such as Rho, Rac, Arf1 & 6, Ras, Cdc42, and Ral. Also, the quantifiable G-LISA versions enabled a new wave of more sensitive applications, e.g. measurement in limited primary cell numbers and Matrigel 3D matrices. We continue to develop and maintain these high standards, which allow you to produce the best results in the least amount of time.

SmGs are involved in regulating cell signaling pathways and impact a wide range of cellular processes, functions, and morphology. The pull-down version of the assay uses affinity beads which are incubated with the extract and then separated by centrifugation. The pelleted products are separated by SDS-PAGE and blotted onto a membrane for Western analysis of the SmG of interest. The G-LISA® format is a modified ELISA which has the affinity reagent permanently attached to the well of a 96-well plate. The extract is incubated in the well which is then washed and probed with primary and secondary antibodies.



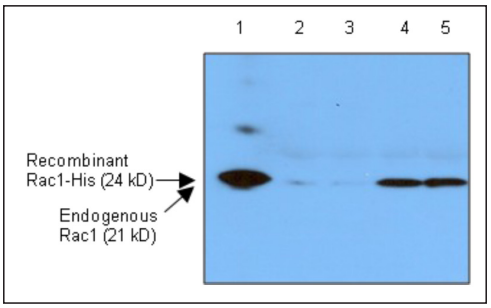
Legend: Rho activation (left) and Rac activation (right) in Swiss 3T3 cells. F-actin is visualized with fluorescent green phalloidin staining (Cat.# PHDG1) and nuclear blue DNA staining with DAPI. Cells were activated with Cat.# CN03 (left) and Cat. # CN04 (right).

Comparison of Pull-down and G-LISA formats

Parameter	Pull-down	G-LISA®
Total protein per assay	500-2000 µg	10-50 µg
Assay time	10-12 h (2 days)	<3 h
Primary cells & 3D matrix compatible	No	Yes
Sample handling	10 Samples	96 Samples
Quantitative data*	Semi	Yes

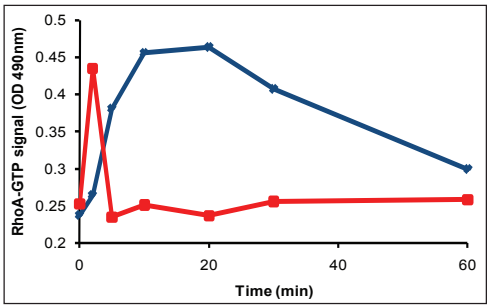
* Numerical readouts and fewer sample handling steps make G-LISA® assays more quantitative.

Pull-down Result Example



Swiss 3T3 cells were serum-starved for 24h; after this, a sample was treated with 10 ng/ml of EGF for 2 min (Lanes 4 & 5). Other cells were not treated and remained serum-starved (Lanes 2 & 3). Rac1 activation was measured using the Rac1 Activation pull-down assay. 500 µg of lysate were assayed with 10 µg of PAK-PBD beads (Lanes 2-5). Lane 1 shows 20 ng of recombinant Rac1-His protein run as a Western blot standard.

G-LISA® Result Example



Time course of activation of RhoA in Swiss 3T3 cells by CN01 and LPA. Serum-starved Swiss 3T3 cells were treated with Rho Activator I, Cat. # CN01 (blue diamonds) or LPA (red squares). RhoA activity was measured by reading signals at OD_{490nm}. Data are background subtracted.

Example Product Citations

RhoA G-LISA® (Cat. # BK124)

Nath, Anu S. et al. Cell Reports 2022 ISSN 2211-1247 https://www.sciencedirect.com/science/article/pii/S2211124722001607

Swaminathan, Bhairavi et al. Scientific Reports 2022 https://www.nature.com/articles/s41598-022-05666-1

Rac1 G-LISA® (Cat. # BK126)

Nath, Anu S. et al. Cell Reports 2022 https://www.sciencedirect.com/science/article/pii/S2211124722001607

Berthenet K. et al. Cell Rep. 2020 Jun 9;31(10):107731. doi: 10.1016/j.celrep.2020.107731.

Rac1 G-LISA® (Cat. # BK128)

Kim, Seunghoon et al. Frontiers in Immunology 2022 https://www.frontiersin.org/articles/10.3389/fimmu.2022.850287/full

Borza, Corina M. et al. Frontiers in Cell and Developmental Biology 2022 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8928223/

Cdc42 G-LISA® (Cat. # BK127)

Jiang, Ruiwei et al. Cells Death & Disease 2022 https://www.nature.com/articles/s41419-022-05184-y

Meng, Zhipeng et al. Science Advances 2022 https://www.science.org/doi/10.1126/sciadv.abl9806

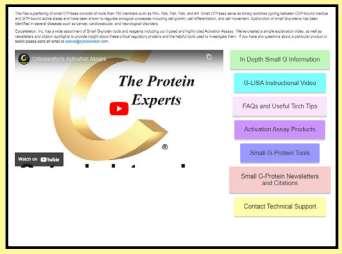
More online!

www.cytoskeleton.com/activation-assays

Pull-down Activation Assays

Pull-down assays utilize affinity beads linked to an effector protein that selectively binds active GTPase followed by quantitation with Western blotting.

Pull-down Activation Assays	Cat. #	Amount
Combo RhoA/Rac1/Cdc42 Activation Assay Biochem Kit™	BK030	3 x 10 assays
Arf1 Activation Assay Biochem Kit™	BK032-S	20 assays
Arf6 Activation Assay Biochem Kit™	BK033-S	20 assays
Cdc42 Activation Assay Biochem Kit™	BK034-S BK034	20 assays 50 assays
Rac1 Activation Assay Biochem Kit™	BK035-S BK035	20 assays 50 assays
RalA Activation Assay Biochem Kit™	BK040	50 assays
Ras Activation Assay Biochem Kit™	BK008-S BK008	20 assays 50 assays
RhoA Activation Assay Biochem Kit™	BK036-S BK036	20 assays 80 assays



Cytoskeleton has compiled useful information about Activation Assays and Small G-Proteins which can be viewed at : https://www.cytoskeleton.com/small-g-protein-information-resources-d1

G-LISA® Activation Assays

G-LISAs use a 96-well plate coated with effector protein that selectively binds the active GTPase followed by quantitation with ELISA techniques.

G-LISA Activation Assays	Cat. #	Amount
RhoA/Rac1/Cdc42 G-LISA Activation Assay Bundle BK135=BK124-S+BK127-S+BK128-S	BK135	3 Kits (24 assays/kit)
Cdc42 G-LISA® Activation Assay, colorimetric	BK127-S BK127	24 assays 96 assays
Rac1,2,3 G-LISA® Activation Assay, colorimetric	BK125	96 assays
Rac1 G-LISA® Activation Assay, colorimetric	BK128-S BK128	24 assays 96 assays
Rac1 G-LISA® Activation Assay, luminescence	BK126	96 assays
RalA G-LISA® Activation Assay, colorimetric	BK129	96 assays
Ras G-LISA® Activation Assay, colorimetric	BK131	96 assays
RhoA G-LISA® Activation Assay, colorimetric	BK124-S BK124	24 assays 96 assays
RhoA G-LISA® Activation Assay, luminescence	BK121	96 assays
Protease Inhibitor Cocktail (100x stock)	PIC02	1 ml

For isoforms not listed, see our information resources online.

Related Activation Assay Products

Total RhoA ELISA

Rapidly measure Total RhoA from cell or tissue lysates using the extremely sensitive and linear Total RhoA ELISA.

ELISA	Cat. #	Amount
Total RhoA ELISA	BK150	96 assays

Activators & Inhibitors

G-switch™ small G-protein activators and inhibitors are highly potent reagents that target endogenous Rho family proteins and pathways.

See Pg. 12

Acti-stain Phalloidins

Acti-stain™ fluorescent phalloidins provide exceptionally bright and stable probes for F-actin at an economical price.

See Pg. 15

GTPase Affinity Beads & Proteins

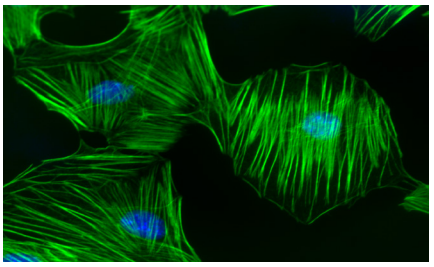
Specifically target the active form of small G-proteins with these brightly-colored GTPase affinity beads and proteins.

See Pg. 12

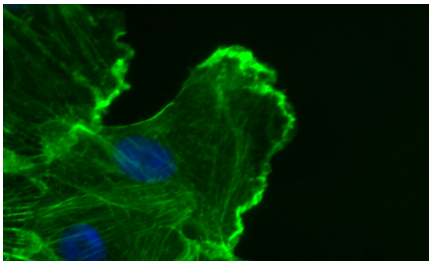
Activators & Inhibitors

The G-switch™ line of small G-protein tools are highly potent reagents that target endogenous Rho family proteins and pathways. In contrast to methods that rely on over-expression or knockdown of target proteins (e.g., DNA transfection of dominant-negative or constitutively-active Rho mutants, RNAi knockdown), G-switch™ reagents act rapidly on the endogenous target protein (in minutes to hours), thereby optimizing the chance of generating a more physiologically relevant response.

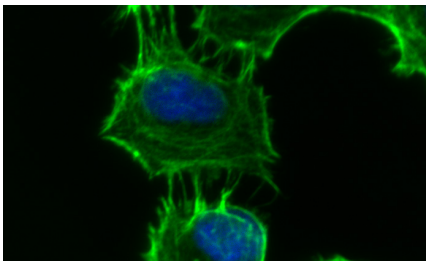
G-protein Modulator	Cell Entry Mechanism	Protein Modulation	Cat. #	Amount
Rho Activator II Deamidation of Rho Gln-63	Cell permeable	Direct	CN03-A CN03-B	3 x 20 µg 9 x 20 µg
Rho Inhibitor I Specific inhibitor of Rho activity, ADP ribosylation of Rho Asn-41 (very cell permeable)	Cell permeable	Direct	CT04-A CT04-B CT04-C	1 x 20 µg 5 x 20 µg 20 x 20 µg
C3 Transferase Protein Specific inhibitor of Rho activity, ADP ribosylation of Rho Asn-41 (limited cell permeability)	Pinocytosis	Direct	CT03-A CT03-C	1 x 25 µg 4 x 25 µg
Rho/Rac/Cdc42 Activator I Deamidation of Rho Gln-63 & Rac/Cdc42 Gln-61	Cell permeable	Direct	CN04-A CN04-B	3 x 20 µg 9 x 20 µg
Rho Activator I SHP-2 phosphatase-mediated Rho activation	Cell permeable	Indirect	CN01-A CN01-B	5 x 10 units 20 x 10 units
Rac/Cdc42 Activator II EGF receptor-mediated Rac/Cdc42 activation	Receptor mediated	Indirect	CN02-A CN02-B	5 x 10 units 20 x 10 units



Stress fibers caused by Rho activation using Cat. # CN03. Actin stained green with Cat. # PHDG1.



Membrane ruffles induced by Rac activation using Cat. # CN04. Actin stained green with Cat. # PHDG1.



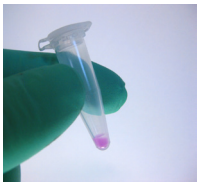
Microspikes induced by Cdc42 activation using Cat. # CN02. Actin stained green with Cat. # PHDG1.

GEF, GAP, and GDI Effector Proteins

G-protein Modulator & Effector Proteins	Purity	Cat. #	Amount
ARNO Protein Sec7 GEF domain protein. GEF for Arf1 & 6. Human recomb., 6xHis tag	>85%	CS-GE07	3 x 20 µg
Dbs His Protein, RhoGEF domain (DH/PH) GEF for Cdc42 and RhoA	>80%	GE01-A	2 x 50 µg
p50RhoGAP GST Protein, full length GAP for Cdc42, Rac, and Rho	>90%	GAP01-A GAP01-B	1 x 50 µg 4 x 50 µg
p50RhoGAP GST Protein, GAP domain GAP for Cdc42, Rac, and Rho	>90%	GAS01-A GAS01-B	1 x 50 µg 4 x 50 µg
Ras-GRF GEF protein Cdc25 domain Human recomb., MBP tagged	>85%	CS-GE03	1 x 100 µg
RhoGDI GST Protein Inhibitor of Cdc42, Rac, and Rho	>90%	GDI01-A	1 x 25 µg
SOS1 Ras GEF Domain Protein GEF for H-, K- or N-Ras	>90%	GE02 GE02-XL	1 x 100 µg 1 x 1 mg
Tiam1 GEF protein, GEF for Rac. Human recomb. DHPH domain, MBP tag	>85%	CS-GE04	1 x 100 µg
Vav1 GEF protein, GEF for Rac. Human recomb. DHPHC1 domain Y174D mutant, 6xHis tagged	>85%	CS-GE05	1 x 100 µg
Vav2 GEF protein , GEF for Rac. Human recomb. DH domain, 6xHis tagged	>85%	CS-GE06	1 x 100 µg
SOS2 exchange domain (563-1051)protein (Human recombinant)	>90	CS-GE08	1 x 100 µg
RAPGEF5 Protein: Ras association and exchange domain (57– 580) wild type. (Human recombinant, GST tagged)	>75%	CS-GE09	1 x 100 µg
SOS1 Exchange Domain (564-1049) Protein (Human Recombinant) (GST-Tagged)	>90%	CS-GE10	1 x 100 µg

GTPase Affinity Beads & Proteins

GTPase Affinity Beads and Proteins	Purity	Cat. #	Amount
GGA3-PBD Beads Binds active (GTP-bound) Arf1 and Arf6	>85%	GGA07-A	1 x 500 µg
PAK-PBD Protein Binds active (GTP-bound) Cdc42 and Rac1,2,3	>80%	PAK01-A PAK01-B	1 x 250 µg 4 x 250 µg
PAK-PBD Beads Binds active (GTP-bound) Cdc42 and Rac1,2,3	>80%	PAK02-A PAK02-B	1 x 500 µg 4 x 500 µg
Raf-RBD Beads Binds active (GTP-bound) K-, N-, H-Ras	>80%	RF02-A RF02-B	1 x 2 mg 4 x 2 mg
Rhotekin-RBD Protein Binds active (GTP-bound) RhoA,B,C	>90%	RT01-A	1 x 500 µg
Rhotekin-RBD Beads Binds active (GTP-bound) RhoA,B,C	>85%	RT02-A RT02-B	2 x 2 mg 6 x 2 mg

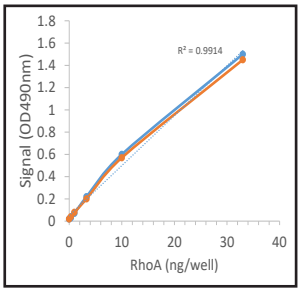


Specifically target the active form of small G-proteins with these brightly-colored GTPase affinity beads and proteins.

Total RhoA ELISA Kit

Measures the total amount of RhoA in a sample of tissue or cell culture extract. Uses a sandwich ELISA to create the high specificity and sensitivity combination. 10-25 µl sample volume. Key components included are:

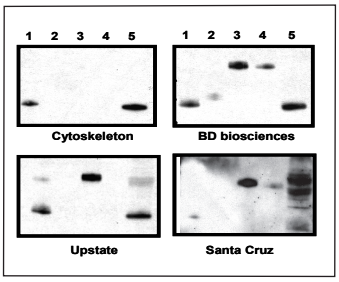
- 96-well anti-Rho binding plate, contains IgY pre-coated surfaces.
- HRP detection reagents.
- Optimized sample dilution buffer.
- Primary and secondary antibodies.
- RhoA control protein included.
- Comprehensive manual.



RhoA ELISA Kit results. The plot indicates the linear dependence of the OD_{490nm} absorbance with the concentration of RhoA.

Product	Cat. #	Amount
Total RhoA ELISA Measures total RhoA levels	BK150	96 assays

Antibodies for Small G-proteins



Anti-Rac1 monoclonal antibody (Cat. # ARC03) does not cross-react with Rac2, 3, or Cdc42 (upper left blot), while all other commercially available Rac1 antibodies cross-react with GTPases other than Rac1.

Small G-protein Antibodies	Host	Type	Species Reactivity	Cat. #	Amount
Cdc42 Specific Antibody Human Cdc42 Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ACD03 ACD03-S	2 x 200 µl 1 x 50 µl
Rac1 Specific Antibody Human C-terminal Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ARC03 ARC03-S	2 x 100 µl 1 x 50 µl

Bulk Quantities Available

email:
cserve@cytoskeleton.com
for bulk inquiries

Additional Signal Transduction Reagents

Signal Transduction Reagents	Cat. #	Amount
RhoGAP Assay Biochem Kit™	BK105	80-160 assays
GTPγS Non-hydrolyzable GTP analog, 50 µl of 20 mM	BS01	1 x 500 µg
GTPase CytoPhos™ Assay One step assay for enzyme Kcat 0.01 to 100	BK054	1000 assays

Purified G-proteins

Purified G-proteins	Purity	Cat. #	Amount
Cdc42 His Protein, constitutively-active (Q61L)	>70%	C6101-A	1 x 10 µg
Cdc42 GST Protein, dominant-negative (T17N)	>90%	C17G01-A	1 x 25 µg
Cdc42 GST Protein, wild-type	>90%	CDG01-C	8 x 25 µg
Cdc42 His Protein, wild-type	>90%	CD01-A CD01-C CD01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg
Rac1 His Protein, constitutively-active (Q61L)	>90%	R6101-A	1 x 10 µg
Rac1 GST Protein, dominant-negative (T17N)	>90%	R17G01-A	1 x 25 µg
Rac1 GST Protein, wild-type	>90%	RCG01-C	8 x 25 µg
Rac1 His Protein, wild-type	>90%	RC01-A RC01-C RC01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg
Rac2 His Protein, wild-type	>90%	RC02-A	1 x 100 µg
Rap1b His Protein, wild-type	>90%	RR02-A	1 x 100 µg
H-Ras His Protein, wild-type	>80%	RS01-A RS01-C	1 x 100 µg 3 x 100 µg
K-Ras4B Protein, human rec., wild-type	>90%	CS-RS03	1 x 100 µg
K-Ras4B Protein, human rec., G12V mutant	>90%	CS-RS04	1 x 100 µg
N-Ras Protein, human rec., wild type	>90%	CS-RS02	1 x 100 µg
R-Ras Protein, human rec., wild-type	>90%	CS-RS05	1 x 100 µg
RhoA His Protein, constitutively-active (Q63L)	>90%	R6301-A	1 x 10 µg
RhoA GST Protein, wild-type	>90%	RHG01-C	8 x 25 µg
RhoA His Protein, wild-type	>80%	RH01-A RH01-C RH01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg
RhoC His Protein, wild-type	>90%	RH03-A	1 x 100 µg
K-Ras4B Protein: G13D (Human recombinant, 6xHis-tag)	>90%	CS-RS06	1 x 100 µg
K-Ras4B Protein: G13S (Human recombinant, 6xHis-tag)	>85%	CS-RS07	1 x 100 µg
K-Ras4B Protein: K128A (Human recombinant, 6xHis-tag)	>90%	CS-RS08	1 x 100 µg
K-Ras4B Protein: G12D (Human recombinant, 6xHis-tag)	>85%	CS-RS13	1 x 100 µg
K-Ras4B G12C mutated protein (Human recombinant, 6xHis-tag)	>85%	CS-RS14	1 x 100 µg

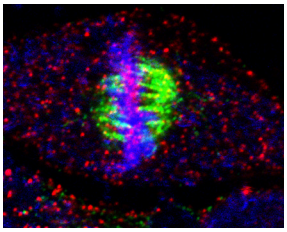
Antibodies & Pathway Signal Detection

With Cytoskeleton's antibodies and reagents, you will benefit from several distinct advantages for your antibody-based reagents:

- All antibodies developed in house
- All antibodies manufactured in house
- Extensive quality control that is visible to the user
- Specialist technical help

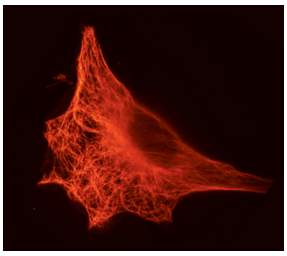
Learn More at
www.cytoskeleton.com/ptm-antibodies
Validation info, analysis, applications, and customer testimonials.

Anti-SUMO-2/3 immuno-fluorescence in mitotic cells



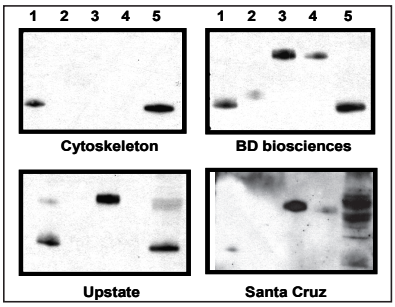
Immunofluorescence of HeLa cells in metaphase with SUMO-2/3 Antibody (Cat. # ASM23, red) and α/β-tubulin antibody (Cat. # ATN02, green). Chromosomal DNA stained with DAPI (blue).

Microtubule Visualizing Antibody (Cat. # ATN02)



Microtubule network in a NIH3T3 cell illuminated with Cytoskeleton's sheep anti-tubulin antibody (ATN02). ATN02 is a pan-tubulin sheep polyclonal antibody, hence it can be co-incubated with mouse, rat or rabbit antibodies for selective dual or triple antibody staining.

Rac1 Antibody Specificity (Cat. # ARC03)



Western blot analysis of small G-protein versus different Rac1 antibodies. Anti-Rac1 monoclonal antibody (Cat. # ARC03) does not cross-react with Rac2, 3, or Cdc42 (upper left blot), while all other commercially available Rac1 antibodies cross-react with GTPases other than Rac1. Ln 1 - Rac1-6xHis, Ln 2- Rac2-6xHis, Ln 3 - Rac3-GST, Ln 4 - Cdc42-GST, Ln 5 - 50 µg platelet extract.

Small G-protein Antibodies

Sm G-protein Antibodies	Host	Type	Species Reactivity	Cat. #	Amount
Cdc42 Specific Antibody Human Cdc42 Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ACD04 ACD04-S	1 x 500 µl 1 x 125 µl
Rac1 Specific Antibody Human C-terminal Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ARC03 ARC03-S	2 x 100 µl 1 x 25 µl

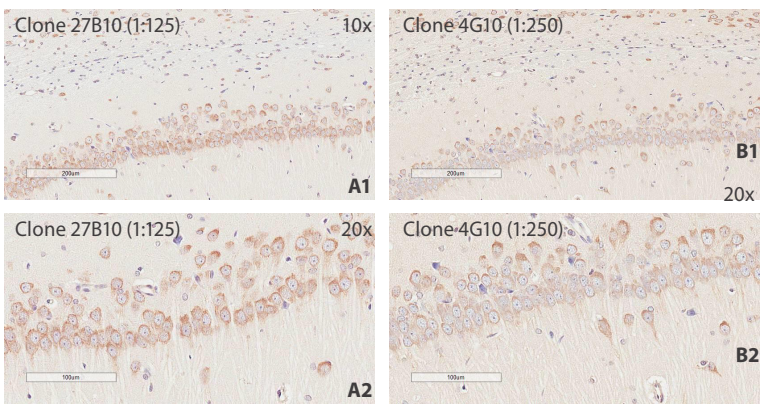
Cytoskeleton Protein Antibodies

Antibodies	Host	Type	Applications	Cat. #	Amount
Anti-Pan Actin Antibody	Mouse	mAb	WB, ICC	AAN02-A AAN02-S	1 x 500 µg 1 x 125 µg
Tubulin Polyclonal Antibody	Sheep	pAb	WB, IF, ELISA	ATN02 ATN02-S	2 x 100 µl 1 x 25 µl
Profilin Antibody	Rabbit	pAb	WB, ICC, ELISA, IP	APUF01-A	1 x 50 µg

New Pathway Signaling Antibodies

Cytoskeleton has expanded its offering of antibodies and reagents to study critical protein modifications. Reagents are available to study acetylation, tyrosyl phosphorylation, SUMOylation, and ubiquitination. The products are rigorously QC-tested and are particularly useful for enrichment studies of your protein of interest.

Immunohistochemical analysis of rat neuronal tissue: Anti-phosphotyrosine mAb 27B10 (Cat. # APY03) vs. 4G10



Anti-phosphotyrosine staining in rat neuronal tissue with Cytoskeleton's monoclonal antibody 27B10 (Cat. # APY03: A1, A2) vs. monoclonal antibody 4G10 (B1, B2). Proteinase K antigen retrieval used. Note the stronger and more specific anti-phosphotyrosine staining with Cytoskeleton's antibody 27B10 versus 4G10 antibody.

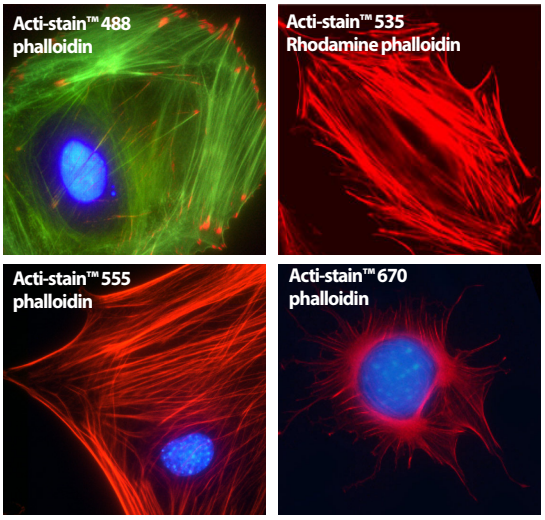
Pathway Signaling Antibodies

PTMtrue Antibody	Host	Type	Applications	Cat. #	Amount
Acetyl Lysine Antibody	Mouse	mAb	WB, IF, IP, CHiP	AAC01 AAC01-S	2 x 100 µl 1 x 25 µl
Acetyl Lysine Affinity Beads	Mouse	mAB	IP	AAC04-beads	4 x 500 µl
Phosphotyrosine Antibody	Mouse	mAb	WB, IP, IF, ELISA	APY03 APY03-S	2 x 100 µl 1 x 25 µl
Anti-Phosphotyrosine Affinity Beads	Mouse	mAb	IP	APY03-Beads	4 x 300 µl
Phosphotyrosine Antibody (HRP conjugate)	Mouse	mAb	WB	APY03-HRP APY03-HRP-S	1 x 100 µl 1 x 25 µl
SUMO-2/3 Antibody (Clone 12F3)	Mouse	mAb	WB, IF, IP	ASM23 ASM23-S	2 x 100 µl 1 x 25 µl
SUMO-2/3 Antibody (Clone 11G2)	Mouse	mAb	IF, IP	ASM24 ASM24-S	2 x 200 µl 1 x 150 µl
SUMO-2/3 Affinity Beads	Mouse	mAb	IP	ASM24-Beads	2 x 400 µl
Ubiquitin Antibody	Mouse	mAb	WB, IF	AUB01 AUB01-S AUB01-XL	2 x 100 µl 1 x 25 µl 4 x 500 µl
Ubiquitin Affinity Beads (binds mono-/poly-ubiquitin tagged proteins)	n/a	n/a	IP	UBA01-beads	2 x 120 µl
Control for Ippt IgG Beads	n/a	n/a	IP	CIG01-beads	10 assays
Control beads for Acetylation Ippt	n/a	n/a	IP	CIG02-beads	10 assays
Control beads for SUMO1 or 2/3 Ippt	n/a	n/a	IP	CIG03-beads	10 assays
Control for Ubiquitin Affinity Beads	n/a	n/a	IP	CUB02-beads	10 assays
SUMO-1 Antibody (Clone 5D8B16)	Mouse	mAb	WB, IP	ASM01 ASM01-S	1 x 100 µl 1 x 25 µl

Acti-stain™ Fluorescent Phalloidins and Spirochrome™ Live Cell Probes

The Acti-stain™ line of fluorescent phalloidins has been developed with an emphasis on creating exceptionally bright and stable probes for F-actin offered at an economical price. Side-by-side comparisons with similar products insure considerable savings without sacrificing quality when switching to an Acti-stain™ probe. The combination of in-house manufacturing, stringent quality control, and convenient packaging provides a great value. Give them a try and see for yourself.

For more information, citations and comparison to other fluorescent phalloidins, visit:
cytoskeleton.com/actin/acti-stain



Swiss 3T3 cells stained with Acti-stain™ Fluorescent Phalloidins

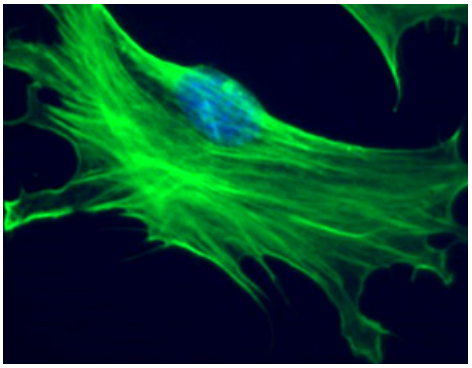
Product	Excitation	Emission	Signal stability without antifade* ($T_{1/2}$ in secs)	Cat. #	Amount**
Acti-stain™ 488 phalloidin	480 nm	535 nm	57	PHDG1-A	300 Slides
Acti-stain™ 535 phalloidin (Rhodamine phalloidin)	535 nm	585 nm	27	PHDR1	300 Slides
Acti-stain™ 555 phalloidin	535 nm	585 nm	46	PHDH1-A	300 Slides
Acti-stain™ 670 phalloidin	640 nm	670 nm	18	PHDN1-A	300 Slides
SiR-Actin Kit Includes SiR700-Actin and Verapamil	630 nm	680 nm	na***	CY-SC001	50 nmol
SPY555-FastAct™	555 nm	580 nm	na***	CY-SC205	100 Slides
SPY650-FastAct™	652 nm	674 nm	na***	CY-SC505	100 Slides

* Stability measured with stained slides without antifade. For comparison, fluorescein phalloidin has a $T_{1/2}$ of 6 secs.
** One slide equals enough phalloidin to stain a 25 mm^2 coverslip.

*** SiR was approximately ten fold more stable than Alexa647 and as stable as atto647N (Lukinavičius, et. al.; Nature Chemistry, 5, 132–139, 2013.). SiR-Actin is a trademarks of Spirochrome SA (Switzerland).

Pan-Actin Antibody

AAN02 is a mouse monoclonal antibody against actin protein. The antibody has been shown to recognize α-skeletal, α-cardiac, α-smooth muscle, β-cytoplasmic, γ-smooth muscle and γ- cytoplasmic actin isotypes.

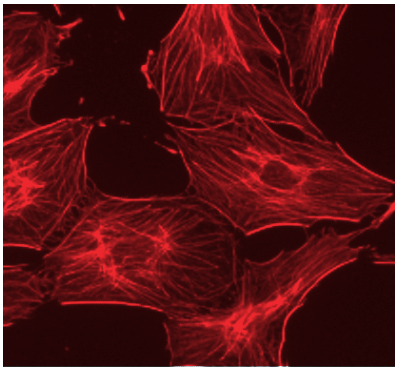


Immunofluorescence images of mouse Swiss 3T3 cells stained with anti-actin antibody. Swiss 3T3 cells were grown to 25% confluency on poly-lysine and laminin coverslips. 3T3 cells were fixed with PFA. Cells were permeabilized with methanol followed by 0.5% Triton X-100 as described in the method. IF staining using 1:500 dilution of anti-actin antibody in PBS is shown (green).

Product	Cat. #	Amount
Anti-Pan Actin Mouse Monoclonal Antibody (Clone 7A8.2.1)	AAN02-S	1 x 125 µl
Anti-Pan Actin Mouse Monoclonal Antibody (Clone 7A8.2.1)	AAN02	1 x 500 µl

F-actin Visualization Biochem Kit™

Fix and permeabilize tissue culture cells while preserving structure of the F-actin cytoskeleton. Subsequently, the F-actin cytoskeleton is stained with fluorescent (rhodamine) phalloidin (Cat. # PHDR1) that is provided in the kit.



The F-actin cytoskeleton of Swiss 3T3 cells visualized with rhodamine phalloidin and using fixatives and cell permeabilizing reagents from the F-actin Visualization Biochem Kit™.

Product	Cat. #	Amount
F-actin Visualization Biochem Kit™	BK005	300 assays

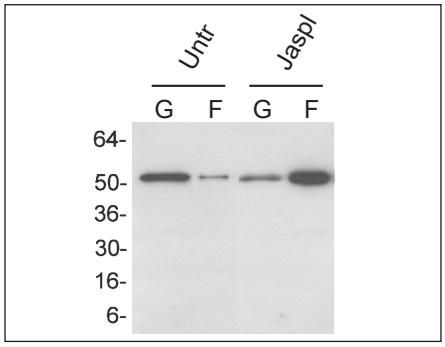
Actin Biochem Kits™

G-actin/F-actin *In Vivo* Assay Biochem Kit™

- Quantitates monomeric vs polymeric actin in cell/tissue lysates
- Reproducible and accurate method
- Contains all needed reagents

Lyse cells or tissue in the F-actin stabilizing buffer, preserving the G-actin:F-actin ratio. Centrifuge samples, separating supernatants (G-actin) and pellets (F-actin) which are then run on a gel for Western blot analysis.

Reorganization of actin after treatment with jasplakinolide



Swiss 3T3 cells were treated with jasplakinolide (Jaspl) or left untreated (Untr) and the G-actin (G) and F-actin (F) content was assayed using the G-actin/F-actin kit. Treatment with jasplakinolide resulted in a potent accumulation of F-actin.

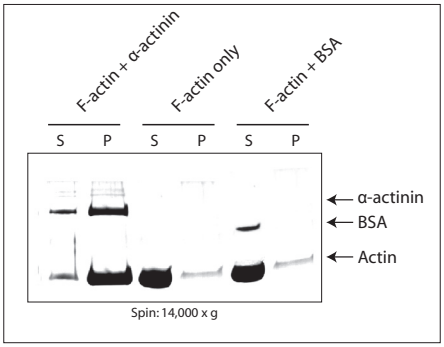
Product	Cat. #	Amount
G-actin/F-actin *In Vivo* Assay Biochem Kit™	BK037	30-100 assays
Protease Inhibitor Cocktail (100x solution)	PIC02	1 ml

Actin Binding Protein Spin-Down Assay Biochem Kit

- Identifies and characterizes Actin Binding Proteins (ABPs)
- Generation of saturation binding curves
- Muscle (BK001) or non-muscle (BK013) actin

This co-sedimentation assay will help you identify whether your ABP is a F-actin binding protein, a F-actin severing protein, has F-actin bundling activity, or is a G-actin binding protein.

Actin bundling assay using kit BK001



F-actin was incubated alone or together with α-actinin or BSA. Bundled F-actin was pelleted by a 14,000 x g centrifugation and pellets (P) and supernatants (S) were run on a SDS-PAGE gel. Only in the presence of the F-actin bundling protein α-actinin is actin pelleted at this centrifugation speed.

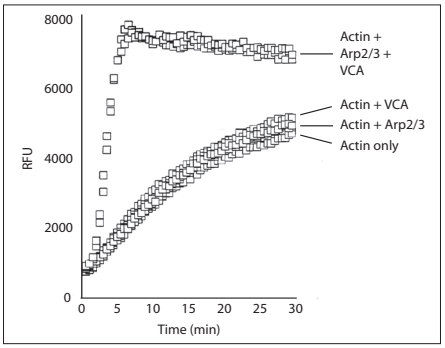
Product	Cat. #	Amount
Actin Binding Protein Spin-Down Assay Biochem Kit™ (skeletal muscle actin)	BK001	30-100 assays
Actin Binding Protein Spin-Down Assay Biochem Kit™ (non-muscle actin)	BK013	30-100 assays

Actin Polymerization Assay Biochem Kit™

- Utilizes fluorescent pyrene-actin
- F-actin polymerization and depolymerization
- Works with multiple sources of actin
- Valuable for characterizing ABPs

This kit is based upon the enhanced fluorescence of pyrene-conjugated actin that occurs during polymerization. Its versatility allows the study of the effects on polymerization (or depolymerization) of a compound, tissue extract, or protein of interest.

Characterization of ABPs using Actin Polymerization Biochem Kit™



Effects of Arp2/3 (Cat. # RP01P) and the WASP VCA (Cat. # VCG03) domain on actin polymerization *in vitro*. Arp2/3 or the WASP VCA domain alone has little effect on the rate of actin polymerization, while the combination of the two leads to an activation of the actin nucleating Arp2/3 complex and a subsequent increased rate of actin polymerization.

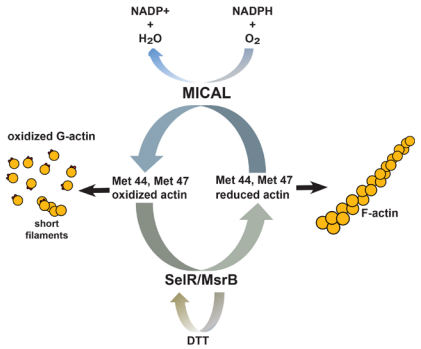
Product	Cat. #	Amount
Actin Polymerization Assay Biochem Kit™	BK003	30-100 assays

The role of actin oxidation

A seminal study by the Terman group identified a role for the enzyme, MICAL, in mediating oxidation of Met44 and Met47 of actin *in vitro*[5].

These in vitro studies showed that MetO at Met44 was sufficient to promote both severing of filaments and decreased polymerization.

Cytoskeleton is pleased to offer the modified versions of actin and pyrene actin for biochemical studies.



Legend; Cycle of Met44 and Met47 oxidation and reduction by catalytic activity of Mical and MsrB enzymes.

MICAL-Oxidized Actin Products

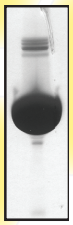
Description	Amount	Cat. #
MICAL-Oxidized (Pyrene labeled) Actin Protein (95% pure) Rabbit Skeletal Muscle	2 x 250 ug 1 x 1 mg	MPAX1 MPAX1-XL
MICAL-Oxidized Actin Protein(>95% pure) Rabbit Skeletal Muscle	2 x 250 ug 1 x 1 mg	MXA95 MXA95-XL
MICAL-1 Protein 6xHis	2 x 50 ug 1 x 1 mg	MIC01 MIC01-XL
MsrB2 Protein 6xHis	2 x 50 ug 1 x 1 mg	MB201 MB201-XL
Actin Protein (pyrene labeled) Rabbit Skeletal Muscle	1 x 1 mg 5 x 1 mg	AP05-A AP05-B
Actin Protein (>95% pure) Rabbit Skeletal Muscle	1 x 1 mg 5 x 1 mg	AKL95-B AKL95-C

Actin & ECM Proteins

High Purity

The highest purity actin available. Purities greater than 99% from most sources. Cited hundreds of times in the literature.

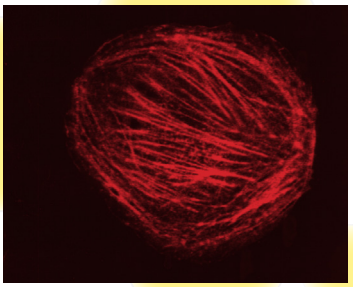
>97% Pure (Cat. AKL95)



>99% Pure (Cat. AKL99)

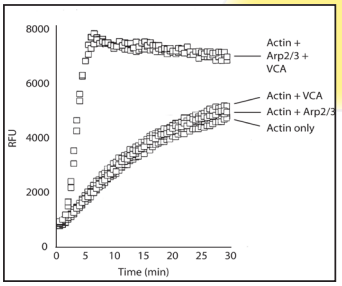
Labeled Actins

Highly pure, biologically active actins labeled with Rhodamine, Pyrene, or Biotin.



Biologically Active

Actin polymerization stimulated by Arp2/3 complex and the VCA domain of WASP measured by Pyrene Actin fluorescence (Cat.# AP05).



Unlabeled Actin Proteins

Unlabeled Actins	Source	Purity	Cat. #	Amount
Actin Protein	Rabbit skeletal muscle	>99%	AKL99-A AKL99-B AKL99-C AKL99-D AKL99-E	4 x 250 µg 2 x 1 mg 5 x 1 mg 10 x 1 mg 20 x 1 mg
Actin Protein	Rabbit skeletal muscle	>97%	AKL95-B AKL95-C	1 x 1 mg 5 x 1 mg
Actin Protein	Bovine cardiac muscle	>99%	AD99-A AD99-B	1 x 1 mg 5 x 1 mg
Actin Protein	Smooth muscle, chicken gizzard	>99%	AS99-A AS99-B	1 x 1 mg 5 x 1 mg
Actin Protein	Human platelet, non-muscle	>99%	APHL99-A APHL99-C APHL99-E	2 x 250 µg 1 x 1 mg 5 x 1 mg
Pre-formed Actin Filaments	Rabbit skeletal muscle	>99%	AKF99-A AKF99-B	1 x 1 mg 5 x 1 mg
Actin Thin Filament (Ca2+ sensitive complex)	Bovine cardiac muscle	90%	TFC01	1 x 1 mg
Actin Thin Filament (Ca2+ sensitive complex)	Rabbit skeletal muscle	90%	CS-TFC02	1 x 1 mg
Ebashi Complex (complex of tromyosin/tropomodulin)	Bovine cardiac muscle	70%	CS-TT05	1 x 1 mg

Labeled Actin Proteins

Labeled Actins	Source	Purity	Cat. #	Amount
Biotinylated Actin Protein	Rabbit skeletal muscle	>99%	AB07-A AB07-C	5 x 20 µg 20 x 20 µg
Pyrene Actin Protein	Rabbit skeletal muscle	>99%	AP05-A AP05-B	1 x 1 mg 5 x 1 mg
Pyrene Actin Protein	Bovine cardiac muscle	>99%	CS-AP07	1 x 250 µg
Rhodamine Actin Protein	Human platelet, non-muscle	>99%	APHR-A APHR-C	4 x 10 µg 20 x 10 µg

Actin Antibodies

Antibodies	Antigen	Host	Grade	Cat. #	Amount
Anti-Pan Actin Antibody	Purified Actin	Mouse	Affinity Purified	AAN02-A AAN02-S	1 x 500 µg 1 x 125 µg
Profilin Antibody	Purified human profilin	Rabbit	Affinity Purified	APUF01-A	1 x 50 µg

Actin Buffers

Actin Buffers	Cat. #	Amount
General Actin Buffer (10 ml or 100 ml when resuspended) For resuspending & diluting G-actin protein	BSA01-001 BSA01-010	1 x 10 ml 1 x 100 ml
Actin Polymerization Buffer (10X stock when resuspended) For the polymerization of actin	BSA02-001	1 x 2 ml
ATP (100 mM stock solution when resuspended) ATP is required for actin stability and polymerization	BSA04-001	1 x 1 ml

Actin Binding Proteins

Actin Binding Proteins	Source	Purity	Cat. #	Amount
α-Actinin Protein	Rabbit skeletal muscle	>90%	AT01-A AT01-C	2 x 50 µg 10 x 50 µg
Arp2/3 Protein Complex	Porcine brain	>90%	RP01P-A RP01P-B	2 x 50 µg 6 x 50 µg
Cofilin Protein	Recombinant human cofilin 1	95%	CF01-A CF01-C	1 x 100 µg 4 x 100 µg
Gelsolin Protein	Recombinant human, plasma isoform	>95%	HPG6-A HPG6-B	4 x 20 µg 20 x 20 µg
Lysyl Oxidase Protein	Bovine leg tendon	>80%	CS-LXE01	1 x 5 µg
Myosin II Cardiac Protein	Bovine cardiac muscle	95%	MY03-A MY03-B	5 x 1 mg 20 x 1 mg
S1 Myosin Protein	Rabbit skeletal muscle Chymotrypsin digest of Cat. # MY02 plus chromat	>90%	CS-MYS04	1 x 250 µg
S1 Myosin Protein	Bovine cardiac muscle Chymotrypsin digest of Cat. # MY03 plus chromat.	>90%	CS-MYS03	1 x 250 µg
Heavy Meromyosin Protein	Bovine cardiac muscle Chymotrypsin digest of Cat. # MY03 plus FPLC.	90%	CS-MH03	1 x 100 µg
Myosin II Protein	Rabbit skeletal muscle	95%	MY02-A MY02-B	5 x 1 mg 20 x 1 mg
Heavy Meromyosin Protein	Rabbit skeletal muscle Chymotrypsin digest of Cat. # MY02.	90%	MH01-A	4 x 50 µg
Profilin Protein	Recombinant human profilin 1	>95%	PR02-A PR02-B PR02-XL2	1 x 100 µg 1 x 500 µg 1 x 1 mg
WASP protein VCA Domain: Activates Arp2/3, GST tag.	Recombinant human	>95%	VCG03-A	1 x 500 µg

Labeled ECM Proteins

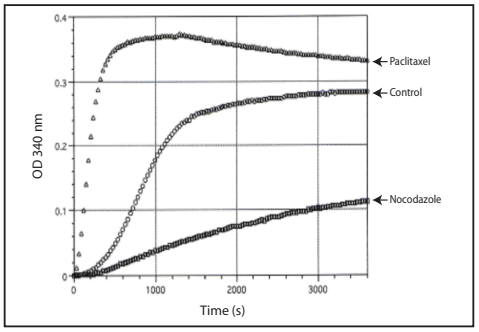
Labeled ECMs	Source	Purity	Cat. #	Amount
Fibronectin Red fluorescent, rhodamine	Bovine serum	>80%	FNR01-A FNR01-B	5 x 20 µg 20 x 20 µg
Fibronectin Green fluorescent, HiLyte Fluor™ 488	Bovine serum	>80%	FNR02-A FNR02-B	5 x 20 µg 20 x 20 µg
Fibronectin Biotinylated	Bovine serum	>80%	FNR03-A FNR03-B	5 x 20 µg 20 x 20 µg
Laminin Red fluorescent, rhodamine	Engelbreth-Holm-Swarm mouse tumor	>90%	LMN01-A LMN01-B	5 x 20 µg 20 x 20 µg
Laminin Green fluorescent, HiLyte Fluor™ 488	Engelbreth-Holm-Swarm mouse tumor	>90%	LMN02-A LMN02-B	5 x 20 µg 20 x 20 µg
Laminin Biotinylated	Engelbreth-Holm-Swarm mouse tumor	>90%	LMN03-A LMN03-B	5 x 20 µg 20 x 20 µg

Bulk Discounts Available
email cserve@cytoskeleton.com

Tubulin Polymerization Assays

Tubulin polymerization assays are available in two formats: 1) the light scatter (also called absorbance or turbidometric) and 2) the fluorescence format based on the DAPI fluorophore. Both methods are sensitive to inhibitors and enhancers of polymerization. BK004P is an absorbance-based format used for hit or no hit screening results, whereas BK006P is for IC50 determinations which need more accuracy. BK011P, the fluorescent-based format, is used for screening and IC50s and is the most economical per assay.

Tubulin polymerization curves using Cat. # BK006P

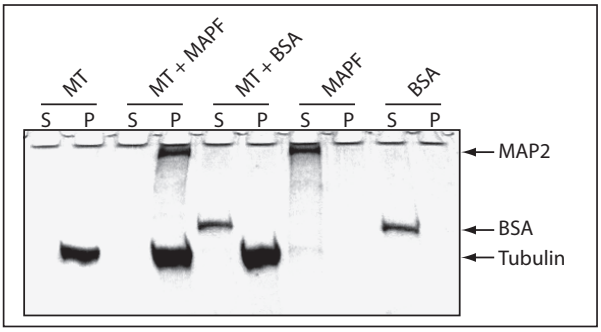


Product	Cat. #	Amount
Tubulin Polymerization Assay Biochem Kit™ Turbidometric-based, >99% pure tubulin	BK006P	24-30 assays
Tubulin Polymerization Assay Biochem Kit™ Turbidometric-based, >97% pure tubulin	BK004P	24-30 assays
Tubulin Polymerization Assay Biochem Kit™ Fluorescence-based, >99% pure tubulin	BK011P	96 assays

Tubulin Binding Assays

The Microtubule Binding Assay provides a robust method to identify and quantify how your test substance interacts with microtubules (see below). Biotinylated tubulin (Cat. # T333P) for use in subunit (heterodimer) binding assays is also available. See the SPA-based ligand competition assay described by Tahir et al. 2000 (Biotechniques, v29, pp156-160.).

Microtubule Binding Assay (Cat. # BK029) used to detect MAP binding to microtubules



Product	Cat. #	Amount
Tubulin (biotin labeled)	T333P-A T333P-B T333P-XL	5 x 20 µg 20 x 20 µg 1 x 500 µg
Microtubule Binding Protein Spin-Down Assay Biochem Kit™	BK029	30-100 assays

Tubulin Buffers, Reagents, & MAPs

Tubulin Buffers, Reagents, & MAPs	Cat. #	Amount
General Tubulin Buffer 10 ml or 100 ml when resuspended	BST01-001 BST01-010	1 x 10 ml 1 x 100 ml
GTP (100 mM stock when resuspended)	BST06-001 BST06-010	1 x 100 µl 10 x 100 µl
Tubulin Glycerol Buffer Enhances tubulin polymerization	BST05-001	1 x 10 ml
Microtubule-Associated Protein (MAP) Fraction Bovine brain MAP fraction, 70% MAP2	MAPF-A MAPF-C	1 x 100 µg 5 x 100 µg
Paclitaxel (2 mM stock when resuspended) Stabilizes microtubules	TXD01	10 x 100 µl
Tau Protein Bovine brain	TA01-A TA01-B	1 x 50 µg 3 x 50 µg

Specialized Tubulins

These specialized tubulins help exploit the diversity between host and pathogen tubulin isotypes. In combination with these proteins, micro-assays provide the most economical method of measuring drug interaction.

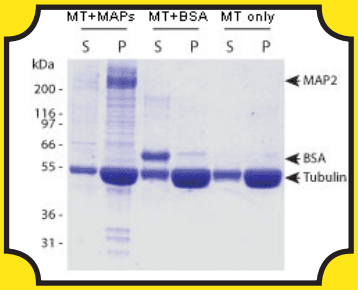
	Products	Cat. #	Amount
	Caki-1 Tumor Tubulin Protein	CS-TM001	1 x 250 µg
NEW	**Alpha Tubulin N-Acetyltransferase 1** (2-236) Protein (Human Recombinant)	CS-TAT01	1 x 100 µg
NEW	**Acetylated Tubulin protein** Source: Porcine Brain	CS-TAC01	1 x 500 µg

Tubulin & FtsZ Proteins

Pre-formed Microtubules (Cat.# MT002)

- Substrate for discovery and characterization of microtubule binding proteins
- Determine IC50s for kinesin inhibitors
- Substrate for kinesin ATPases
- Ideal for HTS applications

Microtubules serve as a substrate for kinesin motor proteins. Kinesin motor proteins orchestrate a wide range of kinetic events within a cell. They have been shown to move cargoes such as chromosomes and vesicles along Microtubule tracks. Cytoskeleton's pre-formed Microtubules are an excellent substrate for detecting Microtubule Binding Proteins in combination with the Kinesin Enzyme Linked Inorganic Phosphate ATPase Kit (Cat. #BK060).



MT binding spin-down assay using MT002. >80% of MT002 (arrow: Tubulin) is in pellet (P) after spin-down. MAPs bind to MTs and end up in pellet while BSA does not and stays in supernatant (S).

Schematic of a Microtubule

For large volume discounts on pre-formed microtubules please email us at: tservice@cytoskeleton.com

Unlabeled Tubulin Proteins

Unlabeled Proteins	Source	Purity	Cat. #	Amount
Tubulin Protein Lyophilized (no glycerol)	Porcine Brain	>99%	T240-A T240-B T240-C T240-DX	1 x 1 mg 5 x 1 mg 20 x 1 mg 1 x 10 mg
Tubulin Protein, MAP rich Lyophilized (no glycerol)	Porcine Brain	70% tubulin 30% MAPs	ML116-A ML116-B ML116-DX	1 x 1 mg 5 x 1 mg 1 x 10 mg
Tubulin for HTS Applications	Porcine Brain	97%	HTS03-A HTS03-B	1 x 4 mg 1 x 40 mg
Tubulin Protein Frozen (no glycerol)	Porcine Brain	>99%	T238P-A T238P-B T238P-C	1 x 1 mg 5 x 1 mg 20 x 1 mg
Microtubules pre-formed, lyophilized	Porcine brain	>99%	MT002-A MT002-XL	4 x 500 µg 1 x 10 mg
Caki-1 Tumor Tubulin Protein	Caki-1 Tumor Tissue	>90%	CS-TM001	1 x 250 µg

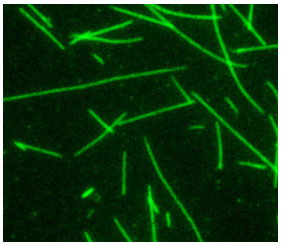
More Tubulin Biochem Kits™ & Antibodies

Tubulin Biochem Kits™	Cat. #	Amount
Microtubule / Tubulin *In Vivo* Assay Biochem Kit™ Quantitates *in vivo* ratio of tubulin polymers & monomers	BK038	30-100 assays
Tubulin polyclonal antibody (host: sheep) Detects all species and isoforms of tubulin	ATN02 ATN02-S	2 x 100 µl 1 x 25 µl

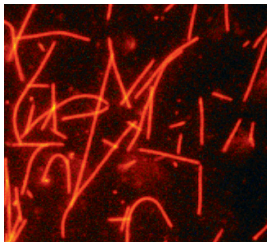
FtsZ Proteins

FtsZ Proteins	Source	Purity	Cat. #	Amount
FtsZ Protein	*S. aureus*, recombinant, 6xHis-tagged	>90%	FTZ02-A FTZ02-B	1 x 1 mg 5 x 1 mg
FtsZ Protein	*S. pneumoniae*, recombinant, 6xHis-tagged	>90%	FTZ03-A FTZ03-B	1 x 1 mg 5 x 1 mg
FtsZ Protein	*E. faecalis*, recombinant, 6xHis-tagged	>90%	FTZ04-A FTZ04-B	1 x 1 mg 5 x 1 mg
FtsZ Protein	*E. coli*, recombinant, 6xHis-tagged	>90%	FTZ05-A FTZ05-B	1 x 1 mg 5 x 1 mg

Labeled Tubulin Proteins



HiLyte Fluor™ 488 Labeled Tubulin - Cat. # TL488M



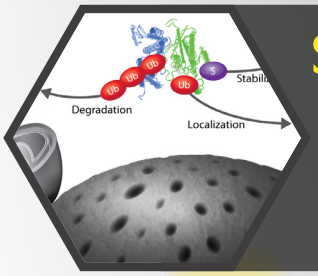
TRITC Rhodamine Labeled Tubulin - Cat. # TL590M

HiLyte Fluor is a trademark of Anaspec, Inc. (CA).

Labeled Tubulin Proteins	Ex / Em wavelength	$T_{1/2}$ of fluorescene (s)	Source	Purity	Cat. #	Amount
AMCA Labeled Tubulin	350 +/-20 nm 440 +/-20 nm	10	Porcine Brain	>99%	TL440M-A TL440M-B	5 x 20 µg 20 x 20 µg
HiLyte Fluor™ 488 Labeled Tubulin	460 +/-20 nm 520 +/-20 nm	300	Porcine Brain	>99%	TL488M-A TL488M-B	5 x 20 µg 20 x 20 µg
TRITC Rhodamine Labeled Tubulin	535 +/-20 nm 590 +/-20 nm	50	Porcine Brain	>99%	TL590M-A TL590M-B	5 x 20 µg 20 x 20 µg
X-Rhodamine Labeled Tubulin	560 +/- 20 nm 620 +/- 20 nm	70	Bovine Brain	>99%	TL620M-A TL620M-B	5 x 20 µg 20 x 20 µg
HiLyte Fluor™ 647 Labeled Tubulin	620 +/-20 nm 670 +/-20 nm	80	Porcine Brain	>99%	TL670M-A TL670M-B	5 x 20 µg 20 x 20 µg
Biotin Tubulin	na	na	Porcine Brain	>99%	T333P-A T333P-B T333P-XL	5 x 20 µg 20 x 20 µg 1 x 500 µg

Ordering information for USA:
Online - cytoskeleton.com
Phone - 303.322.2254
Fax - 303.322.2257
Cytoskeleton, Inc.
1830 S. Acoma St.,
Denver, CO 80223, USA.

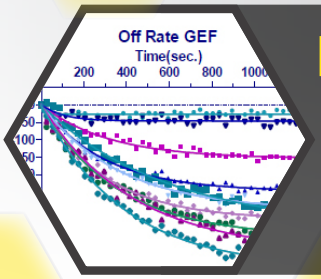
International Customers
Locate your nearest distributor at:
cytoskeleton.com/distributors



Signal-Seeker™ Kits and Antibodies

SUMO • Ubiquitin • Phosphotyrosine • Acetyl-Lysine

Detection Kits • Affinity Beads • Antibodies



K-Ras Mutants and GEF proteins

K-Ras4B G12V, G13D, Q61P • SOS1 • Tiam1 • Vav1 • Vav2

Reliable, pure, and biologically active GEFs, small G-proteins, and assays

The Protein Experts

Comprehensive Technical Support

Expert Guidance from our team of Scientists

Support from the experts as you explore Cytoskeleton's products

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