



# Small G-Proteins

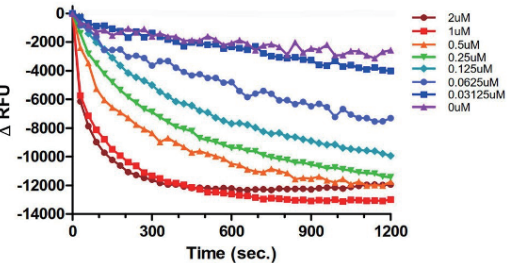
## Cytoskeleton's Small G-Protein Tools

Ras超家族是由150多個成員組成的小GTP酶家族，根據它們的序列同源性，分為幾個次家族，如Rho、Ras、Ran、Rab、Arf和Rad/Rem/Gem/Kir。這些小GTP酶作為二進制開關(binary switches)，在GDP結合非活化狀態和GTP結合活化狀態之間轉換，並已經被證明能調控細胞生長、細胞分化和細胞運動等生物過程。小型G蛋白核苷酸交換受到不同類型蛋白質的調節，包括鳥糞嘌呤核苷酸交換因子(Guanine nucleotide exchange factors, GEFs)、GTP酶活化蛋白(GTPase activating proteins, GAPs)和鳥糞嘌呤核苷酸解離抑制蛋白(Guanine nucleotide dissociation inhibitors, GDIs)。Cytoskeleton, Inc.提供廣泛的小G蛋白工具和試劑，包括純化蛋白質、生物化學試劑盒™、強效活化劑和抑制劑等眾多產品，以協助小型G蛋白研究。

### Purified G-proteins (WT and Mutants)

Purified G-proteins	Purity	Cat. #	Amount
<b>Cdc42 His Protein, constitutively-active (Q61L)</b>	>70%	C6101-A	1 x 10 µg
<b>Cdc42 GST Protein, dominant-negative (T17N)</b>	>90%	C17G01-A	1 x 25 µg
<b>Cdc42 His Protein, wild-type</b>	>90%	CD01-A CD01-C CD01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg
<b>Rac1 His Protein, constitutively-active (Q61L)</b>	>90%	R6101-A	1 x 10 µg
<b>Rac1 GST Protein, dominant-negative (T17N)</b>	>90%	R17G01-A	1 x 25 µg
<b>Rac1 His Protein, wild-type</b>	>90%	RC01-A RC01-C RC01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg
<b>K-Ras4B Protein, human rec., wild-type</b>	>90%	CS-RS03	1 x 100 µg
<b>N-Ras Protein, human rec., wild-type</b>	>90%	CS-RS02	1 x 100 µg
<b>RhoA His Protein, wild-type</b>	>80%	RH01-A RH01-C RH01-XL	1 x 100 µg 3 x 100 µg 1 x 1 mg

See our full list of purified Small G-proteins @ Cytoskeleton.com



Legend: K-Ras4B protein (Cat. # RS03) (2.5 µM) was pre-loaded with Bodipy-FL- GDP using EDTA for exchange. The nucleotide was locked in place with excess Mg<sup>2+</sup>. RasGRF at different concentrations as shown or Dilution Buffer (purple) was pipetted into wells of a black 384-well low volume plate. At time zero, 500 µM GTP was pipetted in to the wells and the reactions were monitored for 20 min by reading every 30 sec.

### RhoGEF Assay Biochem Kit™

利用螢光的方式分析small G-proteins的fluorescent-GTP核苷酸交換，適用於所有其他小型G蛋白。

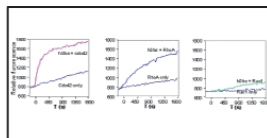
Kit包含:

Fluorescent-GTP, 365nm Ex / 485nm Em.

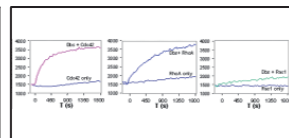
Reaction buffer

Control GEF和GTPase proteins

GEF domain of Dbs (Positive control)



Above: Dbs exchange activity for Cdc42, RhoA and Rac1 in 96-well half area plate format.



Above: Dbs exchange activity for Cdc42, RhoA and Rac1 in 384-well plate format

Signal Transduction Kits	Cat. #	Amount
<b>RhoGEF Exchange Assay Biochem Kit™</b>	BK100	60-300 assays
<b>RhoGAP Assay Biochem Kit™</b>	BK105	80-160 assays
<b>GTPase CytoPhos™ Assay</b> One step assay for enzyme Kcat 0.01 to 100	BK054	1000 assays

### GEF, GAP, and GDI Effector Proteins

G-Protein Modulator & Effector Proteins	Purity	Cat. #	Amount
<b>Dbs His Protein, RhoGEF domain (DH/PH)</b> GEF for Cdc42 and RhoA	>80%	GE01-A	2 x 50 µg
<b>p50RhoGAP GST Protein, GAP domain</b> GAP for Cdc42, Rac, and Rho	>90%	GAS01-A GAS01-B	1 x 50 µg 4 x 50 µg
<b>Ras-GRF GEF protein Cdc25 domain</b> Human recomb., MBP tagged	>85%	CS-GE03	1 x 100 µg
<b>RhoGDI GST Protein</b> Inhibitor of Cdc42, Rac, and Rho	>90%	GDI01-A	1 x 25 µg
<b>SOS1 Ras GEF Domain Protein</b> GEF for H-, K- or N-Ras	>90%	GE02 GE02-XL	1 x 100 µg 1 x 1 mg
<b>Vav1 GEF protein, GEF for Rac.</b> Human recomb. DHPHC1 domain Y174D mutant, 6xHis tagged	>85%	CS-GE05	1 x 100 µg

See our full list of GEF, GAP, and GDI proteins @ Cytoskeleton.com

### Antibodies for Small G-proteins

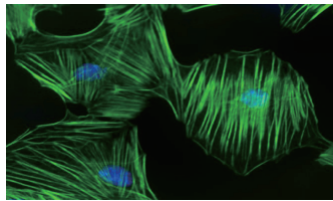
Small G-protein Antibodies	Host	Type	Species Reactivity	Cat. #	Amount
<b>Cdc42 Specific Antibody</b> Human Cdc42 Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ACD03 ACD03-S	2 x 200 µl 1 x 50 µl
<b>Rac1 Specific Antibody</b> Human C-terminal Peptide	Mouse	mAb	Hu, Ms, Rt, other extracts	ARC03 ARC03-S	2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

## G-Switch: Activators and Inhibitors

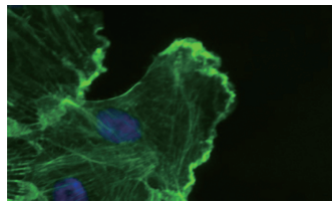


G-switch™系列的小型G蛋白研究工具是高效的試劑，專門針對內源性Rho家族蛋白及相關路徑。與依靠大量表現或降低目標蛋白的方法(例如，DNA轉染顯性抑制(Dominant-negative)或持續性活化(Constitutively-active)的Rho突變體、RNAi knockdown)相比，G-switch™試劑能快速作用於內源性目標蛋白(在數分鐘至數小時內)，因此利於產生更具生理相關性的反應。

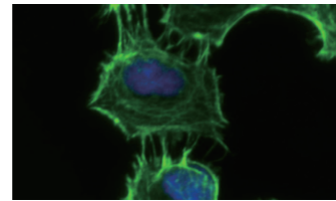
GTPase Affinity Beads and Proteins	Purity	Cat. #	Amount
<b>GGA3-PBD Beads</b> Binds active (GTP-bound) Arf1 and Arf6	>85%	GGA07-A	1 x 500 µg
<b>PAK-PBD Protein</b> Binds active (GTP-bound) Cdc42 and Rac1, 2, 3	>80%	PAK01-A PAK01-B	1 x 250 µg 4 x 250 µg
<b>PAK-PBD Beads</b> Binds active (GTP-bound) Cdc42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



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.

## Cytoskeleton's Active Small G-Protein Detection Tools

### GTPase Affinity Beads & Proteins

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

PAK-PBD、GGA3-PBD、Rhotekin-RBD和Raf-RBD bead是用於從細胞裂解物中分離活性形式的小型G蛋白的工具。

PAK bead非常適用於Cdc42和Rac1的研究，GGA3 bead專一於Arf1和Arf6，Rhotekin bead專一於Rho，而Raf bead專一於Ras次家族。這些複合物以顏色標記，以便輕鬆識別沉澱物(Cytoskeleton Innovated)。



使用這些鮮豔的 GTPase 親和珠和蛋白質專門針對小型G蛋白的活性形式。

### G-LISA and Activation Assays

G-LISA小型GTPase活化測試提供了一種快速且敏感的方法，用於測量GTP結合活化的小型G蛋白。

See our Activation Assay Brochure To Learn More Or scan this QR Code:



#### Activation Assay Video

Learn which assay format is right for you.  
[www.cytoskeleton.com/activationassayvideo](http://www.cytoskeleton.com/activationassayvideo)