

Introduction

The ChromoTek GFP-Trap[®] Dynabeads[™] consists of an anti-Green Fluorescent Protein (GFP) Nanobody (VHH), which is covalently bound to Dynabeads. GFP-Trap Dynabeads is used to immunoprecipitate GFP-fusion proteins from cell extracts of various organisms like mammals, plants, bacteria, yeast, insects etc.

Properties

Ligand: Anti-GFP single domain antibody fragment (VHH, Nanobody)

Reactivity: Specifically binds to most common GFP derivatives (visit www.chromotek.com for a complete list of recognized GFP variants).

Binding capacity: 2-2.8 µg of recombinant GFP per 25 µL bead slurry

Bead size: 2.8 µm

Buffer compatibility: See *Wash Buffer compatibility table*.

Storage buffer: 1x PBS, Preservative: 0.09 % sodium azide

Storage conditions: Upon receipt store at +4°C. Do not freeze!

Stability: Stable for 1 year upon receipt.

Shipment: Shipped at ambient temperature.

RRID: AB_2827592

Suggested buffer compositions

Required buffer solutions

NEW: Update of Wash buffer components.

Buffer	Composition
Lysis buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.5 mM EDTA, 0.5 % Nonidet™ P40 Substitute (adjust the pH at +4°C)
RIPA buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.5 mM EDTA, 0.1 % SDS, 1 % Triton™ X-100, 1 % deoxycholate (adjust the pH at +4°C)
Dilution buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.5 mM EDTA (adjust the pH at +4°C)
Wash buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.05 % Nonidet™ P40 Substitute, 0.5 mM EDTA (adjust the pH at +4°C)
2x SDS-sample buffer	120 mM Tris/Cl pH 6.8, 20 % glycerol, 4 % SDS, 0.04 % bromophenol blue, 10 % β-mercaptoethanol
Acidic elution buffer	200 mM glycine pH 2.5 (adjust the pH at +4°C)
Neutralization buffer	1 M Tris pH 10.4 (adjust the pH at +4°C)

Note: Use your equivalent cell lysis buffer for other cell types like yeast, plants, insects, bacteria.

Note: Consider using a Wash buffer without detergent for co-immunoprecipitation.

GFP-Trap Dynabeads

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Wash buffer compatibility table

Buffer ingredients	Max. concentration
DTT	10 mM
NaCl	2 M
Nonidet™ P40 Substitute	2 %
SDS	0.2 %
Triton™ X-100	1 %
Urea	8 M

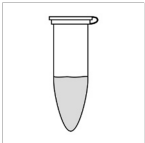
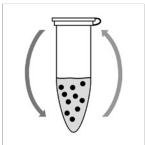
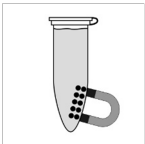
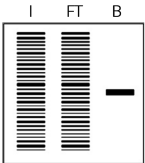
Product sizes

Product	Product code	Size
GFP-Trap® Dynabeads	gtd-10	10 reactions (250 µL slurry)
	gtd-20	20 reactions (500 µL slurry)
	gtd-100	100 reactions (2.5 mL slurry)
	gtd-200	200 reactions (5 mL slurry)
	gtd-400	400 reactions (10 mL slurry)
GFP-Trap® Dynabeads Kit	gtdk-20	20 reactions (500 µL slurry) including buffers

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Protocol at a glance

General		• Perform all steps at +4°. • Use your preferred cell lysis buffer and cell lysis conditions.
Cell Lysis		• Use 10^6-10^7 cells and 200 μL Lysis buffer. • Perform cell lysis and clear lysate. • Mix 200 μL cleared lysate with 300 μL Dilution buffer.
Bead equilibration		• Transfer 25 μL bead slurry into a 1.5 mL tube. • Equilibrate beads 3x with 500 μL Wash Buffer.
Protein binding		• Add 500 μL diluted lysate to beads. • Rotate end-over-end for 1 hour at +4°C.
Washing		• Wash beads 3x with 500 μL Wash buffer. • Transfer beads to a new tube during the last washing step.
Elution with SDS-sample buffer		• Resuspend beads in 80 μL 2x SDS-sample buffer. • Boil beads for 5 min at +95°C. • Analyze the supernatant in SDS-PAGE / Western Blot.

Immunoprecipitation protocol

Cell material

The following protocol describes the preparation of mammalian cell lysate!

For other type of cells, we recommend using 500 µg of cell extract and start the protocol with step *Bead equilibration*.

Mammalian cell lysis

Note: Harvesting of cells and cell lysis should be performed with ice-cold buffers. We strongly recommend to add protease inhibitors to the Lysis buffer to prevent degradation of your target protein and its binding partners.

For one immunoprecipitation reaction, we recommend using $\sim 10^6$ - 10^7 cells.

1. Choice of lysis buffer:

- For cytoplasmic proteins, resuspend the cell pellet in 200 µL ice-cold Lysis buffer by pipetting up and down. Supplement Lysis buffer with protease inhibitor cocktail and 1 mM PMSF (not included).
- For nuclear/chromatin proteins, resuspend cell pellet in 200 µL ice-cold RIPA buffer supplemented with DNaseI (f.c. 75-150 Kunitz U/mL), MgCl_2 (f.c. 2.5 mM), protease inhibitor cocktail and PMSF (f.c. 1 mM) (not included).

2. Place the tube on ice for 30 min and extensively pipette the suspension every 10 min.

3. Centrifuge cell lysate at 17,000x g for 10 min at +4°C. Transfer cleared lysate (supernatant) to a pre-cooled tube and add 300 µL Dilution buffer supplemented with 1 mM PMSF and protease inhibitor cocktail (not included). If required, save 50 µL of diluted lysate for further analysis (input fraction).

Bead equilibration

1. Resuspend beads by gently pipetting up and down or by inverting the tube. Do not vortex the beads!
2. Transfer 25 µL of bead slurry into a 1.5 mL reaction tube.
3. Add 500 µL ice-cold Wash buffer.
4. Separate the beads with a magnet until the supernatant is clear. Discard the supernatant.

Protein binding

1. Add diluted lysate to the equilibrated beads.
2. Rotate end-over-end for 1 hour at +4°C.

Washing

1. Separate the beads with a magnet until the supernatant is clear.
2. If required, save 50 µL of supernatant for further analysis (flow-through/non-bound fraction).
3. Discard remaining supernatant.
4. Resuspend beads in 500 µL Wash buffer.
5. Separate the beads with a magnet until the supernatant is clear. Discard the remaining supernatant.
6. Repeat this step at least twice.
7. During the last washing step, transfer the beads to a new tube.

Optional: To increase stringency of the Wash buffer, test various salt concentrations e.g. 150-500 mM, and/or add a non-ionic detergent e.g. Triton™ X-100 (see *Wash buffer compatibility table* for maximal concentrations).

Elution with 2x SDS-sample buffer (Laemmli)

1. Remove the remaining supernatant.
2. Resuspend beads in 80 µL 2x SDS-sample buffer.
3. Boil beads for 5 min at +95°C to dissociate immunocomplexes from beads.
4. Separate the beads with a magnet.
5. Analyze the supernatant in SDS-PAGE / Western Blot.

Note: For Western blot detection we recommend GFP antibody [3H9] (3h9-20; -100) or GFP antibody [PABG1] (PABG1-20; -100) in combination with Nano-Secondary® alpaca anti-rabbit IgG, recombinant VHH, Alexa Fluor® 488/568/647 [CTK0101, CTK0102] (srbAF488-1-10; -100; srbAF568-1-10; -100; srbAF647-1-10; -100).

Elution with Acidic elution buffer

1. Remove the remaining supernatant.
2. Add 50–100 µL Acidic elution buffer and constantly pipette up and down for 30-60 sec at +4°C or room temperature.
3. Separate the beads with a magnet until the supernatant is clear.
4. Transfer the supernatant to a new tube.
5. Immediately neutralize the eluate fraction with 5-10 µL Neutralization buffer.
6. Repeat this step at least once to increase elution efficiency.

Note: Elution at room temperature is more efficient than elution at +4°C. Prewarm buffers for elution at room temperature.

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Product overview and related products

GFP toolbox	Product code
GFP-Trap® Agarose	gta-10; -20; -100
GFP-Trap® Agarose Kit	gtak-20
GFP-Trap® Magnetic Agarose	gtma-10; -20; -100
GFP-Trap® Magnetic Agarose Kit	gtmak-20
GFP-Trap® Dynabeads	gtd-10; -20; -100
GFP-Trap® Dynabeads Kit	gtdk-20
iST GFP-Trap Kit for IP/MS	gtak-iST-8
GFP-Trap® Multiwell Plate	gtp-96
Binding Control Agarose	bab-20
Binding Control Magnetic Agarose	bmab-20
Spin columns	sct-10; sct-20; sct-50
GFP VHH, recombinant binding protein	gt-250
GFP VHH, biotinylated recombinant binding protein	gtb-250
EGFP, recombinant purified protein	EGFP-250
GFP antibody [3H9] (rat monoclonal)	3h9-20; -100
GFP antibody [PABG1] (rabbit polyclonal)	PABG1-20; -100
Nano-Secondary® alpaca anti-rabbit IgG, recombinant VHH, Alexa Fluor® 488 [CTK0101, CTK0102]	srbAF488-1-10; -100
Nano-Secondary® alpaca anti-rabbit IgG, recombinant VHH, Alexa Fluor® 568 [CTK0101, CTK0102]	srbAF568-1-10; -100
Nano-Secondary® alpaca anti-rabbit IgG, recombinant VHH, Alexa Fluor® 647 [CTK0101, CTK0102]	srbAF647-1-10; -100
GFP-Booster Alexa Fluor® 488	gb2AF488-10; -50
GFP-Booster Alexa Fluor® 568	gb2AF568-10; -50
GFP-Booster Alexa Fluor® 647	gb2AF647-10; -50
GFP-Booster ATTO488	gba488-10; -100
GFP-Booster ATTO594	gba594-10; -100
GFP-Booster ATTO647N	gba647n-10; -100

For product details, information, and ordering visit www.chromotek.com.

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Disclaimer

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