



# GFP Nanoselector Magnetic beads

## Summary

Catalog No	019-101-003
Ligand	Anti-GFP single domain antibody fragment (VHH, Nanobody)
Bead size	~ 40 $\mu$ m
Reactivity	Recognizes GFP, mEGFP, superfolder GFP and most common CFP and YFP variants. Does not cross-react with mCherry, mRFP, dsRed, mTagBFP, mTagRFP or their most common derivatives
Binding capacity	High binding capacity, 10 $\mu$ L slurry bind about 20 $\mu$ g of recombinant GFP
Storage	Shipped at ambient temperature. Upon receipt store at 4°C. Stable for 1 year. Do not freeze
Storage buffer	50 % slurry in PBS containing 20 % Ethanol

## Description

GFP Nanoselector Magnetic beads have been specifically designed to bind GFP-fusion proteins. GFP Nanoselector Magnetic beads are based on small high-affinity recombinant single domain antibody covalently coupled to the surface of Magnetic beads. GFP Nanoselector Magnetic beads are ideal tools to isolate or purify GFP-fusion proteins fast and efficiently.

## Background

Green fluorescent proteins (GFPs) and the variants thereof are widely used to study protein localization and dynamics. For biochemical analysis including mass spectrometry and enzyme activity measurements these GFP-fusion proteins and their interacting factors need to be isolated fast and efficiently by immunoprecipitation using the GFP Nanoselector Magnetic beads. Due to the single-chain nature of sdAbs and their stable and covalent attachment, no leakage of light and heavy chains is observed during elution with SDS sample buffer.

## Application notes

Immunoprecipitation/ Co-IP  
 Mass spectrometry  
 On-bead enzyme assays  
 ChIP, RIP analysis

## Benefits

- Effective pulldown of GFP-fusion proteins for consistent results
- No heavy & light antibody chains, short incubation (5-30 min)
- Extraordinary binding, even under harsh conditions
- Very high affinity to bind even low abundant proteins

## Immunoprecipitation protocol

### 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 ~10<sup>6</sup>- 10<sup>7</sup> cells.

#### 1. Choice of lysis buffer:

\* For cytoplasmic proteins, resuspend the cell pellet in 200  $\mu$ L 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  $\mu$ L ice-cold RIPA buffer supplemented with DNaseI (f.c. 75-150 Kunitz U/mL), MgCl<sub>2</sub> (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  $\mu$ L Dilution buffer supplemented with 1 mM PMSF and protease inhibitor cocktail (not included). If required, save 50  $\mu$ L of diluted lysate for further analysis (input fraction).

### Beads equilibration

1. Resuspend the beads by gently pipetting up and down or by inverting the tube. Do not vortex the beads!

2. Transfer 25  $\mu$ L of bead slurry into a 1.5 mL reaction tube.

3. Add 500  $\mu$ L ice-cold Dilution buffer.

4. Separate the beads with a magnet until the supernatant is clear.

5. Discard the supernatant.

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### 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 mM - 500 mM, and/or add a non-ionic detergent e.g. Triton™ X-100.

### Elution with 2x SDS-sample buffer

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.

### Elution with Glycine-elution buffer

1. Remove the remaining supernatant.
2. Add 50–100 µL Glycine-elution buffer and constantly pipette up and down for 30 - 60 sec at +4°C.
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 Neutralization buffer.
6. Repeat this step at least once to increase elution efficiency .

## Suggested buffer compositions

Buffer	Composition
Lysis buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.5 mM EDTA, 0.5 % NP40
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
Dilution/Wash buffer	10 mM Tris/Cl pH 7.5, 150 mM NaCl, 0.5 mM EDTA
2x SDS-sample buffer	120 mM Tris/Cl pH 6.8, 20 % glycerol, 4 % SDS, 0.04 % bromophenol blue, 10 % β-mercaptoethanol
Glycine-elution buffer	200 mM glycine pH 2.0
Neutralization buffer	1 M Tris pH 10.4

## Related products

Code Number	Product Description	Size	prices(¥)
019-101-002	GFP Nanoselector Agarose	0.25mL	1500
019-101-003	GFP Nanoselector Magnetic beads	0.25mL	1500
020-101-002	RFP Nanoselector Agarose	0.25mL	1500
020-101-003	RFP Nanoselector Magnetic beads	0.25mL	1500
013-101-002	mNeongreen Nanoselector Agarose	0.25mL	1500
014-101-002	TurboGFP Nanoselector Agarose	0.25mL	1500
015-101-002	MBP Nanoselector Agarose	0.25mL	1500
010-101-002	GST Nanoselector Agarose	0.25mL	1500
011-101-002	SNAP tag Nanoselector Agarose	0.25mL	1500
012-101-002	Halo Nanoselector Agarose	0.25mL	1500
003-101-002	HA tag Nanoselector Agarose	0.25mL	1500
004-101-002	c-His tag Nanoselector Agarose	0.25mL	1500
049-101-002	mWasabi Nanoselector Agarose	0.25mL	1500
017-101-002	TagFP Nanoselector Agarose	0.25mL	1500
025-101-002	Rabbit IgG Nanoselector Agarose	0.25mL	1500
001-101-002	Mouse IgG Nanoselector Agarose	0.25mL	1500
067-101-003	Streptavidin Magnetic beads	0.25mL	1500
100-100-100	Binding Control Nanoselector Agarose	1mL	800
100-100-200	Binding Control Magnetic beads	1mL	800

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