

# C-His tag Nanoselector Agarose

## Summary

Catalog No	004-101-002
Ligand	Anti-His tag(C-terminal) single domain antibody fragment (VHH, Nanobody)
Bead size	~ 40 $\mu$ m
Reactivity	The C-His tag-Nanoselector recognizes the His-tag sequence motif HHHHHH at the C-terminus of the fusion protein
Binding capacity	High binding capacity, 10 $\mu$ L slurry bind about 20 $\mu$ g of recombinant GFP-His protein
Storage	Shipped at ambient temperature. Upon receipt store at 4°C. Stable for 1 year. Do not freeze
Storage buffer	Formulation 50 % slurry in PBS containing 20 % Ethanol

## Description

His tag Nanoselector Agarose have been specifically designed to bind His tag-fusion proteins. His tag Nanoselector Agarose is based on small high-affinity recombinant alpaca antibody fragments covalently coupled to the surface of Agarose. His tag Nanoselector Agarose is an ideal tool to isolate or purify His tag-fusion proteins fast and efficiently

## Background

His-tag, or polyhistidine tag, comprises a consecutive series of six to ten histidine residues. The size of the His tag is small and it hardly affects the functionality of the fusion protein. His tag is widely used for many recombinant proteins to facilitate purification, and allows researchers to purify the protein of interest from cell lysate or mixture of many proteins easily .

His tag Nanoselector Agarose has been specifically designed to bind His tag. 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. His tag Nanoselector Agarose thus features high affinity and superior capacity for His tag fusion proteins while showing negligible non-specific background. His tag Nanoselector Agarose is compatible not only with physiological buffers but also with high stringency buffers which provides great freedom to adjust the binding and washing conditions to the experimental needs.

## Application notes

Protein purification  
 Immunoprecipitation (IP)/Co-IP  
 Mass spectrometry (MS)  
 Enzyme activity measurements  
 ChIP/ RIP analysis

## Benefits

- Effective pulldown of C-His-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 ~106- 107 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).

### Bead 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. Sediment the beads by centrifugation at 2,500x g for 5 min at +4°C.

5. Discard the supernatant.

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### Protein binding

1. Transfer 25  $\mu$ L of equilibrated beads to the tube of protein binding.
2. Rotate end-over-end for 1 hour at +4°C.

### Washing

1. Sediment the beads by centrifugation at 2,500x g for 5 min at +4°C.
2. If required, save 50  $\mu$ L of supernatant for further analysis(-flow-through/non-bound fraction).
3. Discard remaining supernatant.
4. Resuspend beads in 500  $\mu$ L Wash buffer.
5. Sediment the beads by centrifugation at 2,500x g for 5 min at +4°C. 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  $\mu$ L 2x SDS-sample buffer.
3. Boil beads for 5 min at +95°C to dissociate immunocomplexes from beads.
4. Sediment the beads by centrifugation at 2,500x g for 2 min at +4°C.
5. Analyze the supernatant in SDS-PAGE.

### Elution with Glycine-elution buffer

1. Remove the remaining supernatant.
2. Add 50–100  $\mu$ L Glycine-elution buffer and constantly pipette up and down for 30 - 60 sec at +4°C. and down for 30 - 60 sec at +4°C.
3. Sediment the beads by centrifugation at 2,500x g for 5 min at +4°C.
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 % $\beta$ -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	mNeogreen 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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