

Sample prep

Dynabeads streptavidin products for manual and automated protocols

No compromising on results

invitrogen

Choose your favorite

Streptavidin-coupled Invitrogen™ Dynabeads™ magnetic beads can provide an ideal platform for isolation and handling of biotinylated molecules and targets (e.g., antibodies, proteins, peptides, small molecules, sugars, lectins, oligonucleotides, DNA, and RNA). Six Dynabeads streptavidin products are available, varying in size and surface properties (Table 1). Your choice should be guided by your sample and target properties, buffers and solutions applied, and specific downstream application needs.

Invitrogen™ Dynabeads™ Streptavidin for Target Enrichment is recommended for enrichment of target DNA sequences

in next-generation sequencing (NGS) workflows.

Invitrogen™ Dynabeads™ M-280 Streptavidin and MyOne™ Streptavidin T1 beads are commonly used for protein and immunoassay applications. Invitrogen™ Dynabeads™ M-270 Streptavidin and MyOne Streptavidin C1 beads are preferred for nucleic acid protocols involving high chaotropic salt concentrations, for immunoassays involving small biotinylated antigens, and applications incompatible with BSA. The smaller Dynabeads MyOne beads offer increased binding capacity and slower sedimentation, making them ideal for automated applications. Invitrogen™ Dynabeads™ Streptavidin for *In Vitro* Transcription is ideal for mRNA synthesis.

Table 1. An overview of Dynabeads streptavidin products and their qualities based on selected applications.

Product	Binding capacities	Characteristics and properties		Ideal use
Dynabeads Streptavidin for Target Enrichment	Free biotin: 950–1,500 pmol/mg beads dsDNA: ~20 µg/mg beads ss oligonucleotides: ~400 µg/mg beads	<ul style="list-style-type: none"> Hydrophobic bead surface Based on tosylactivated beads Diameter: 1.0 µm Size distribution: CV <3% BSA as blocking protein 	<ul style="list-style-type: none"> Isoelectric point: pH 5.0 Low charge (–10 mV, at pH 7) Iron content (ferrites): 26% (37%) Low sedimentation rate and faster reaction 	<ul style="list-style-type: none"> Enrichment of target sequences in library preps for NGS analysis Well suited for automated applications
Dynabeads M-280 Streptavidin	Free biotin: 490–750 pmol/mg beads Biotinylated Ig: 5–10 µg/mg beads	<ul style="list-style-type: none"> Hydrophobic bead surface Based on tosylactivated beads Diameter: 2.8 µm Size distribution: CV <3% BSA as blocking protein 	<ul style="list-style-type: none"> Isoelectric point: pH 5.0 Low charge (–10 mV, at pH 7) Iron content (ferrites): 12% (17%) 	<ul style="list-style-type: none"> Immunoassays Protein purification Phage display Biopanning Cell isolation
Dynabeads MyOne Streptavidin T1	Free biotin: 950–1,500 pmol/mg beads Biotinylated Ig: Up to 20 µg/mg beads	<ul style="list-style-type: none"> Hydrophobic bead surface Based on tosylactivated beads Diameter: 1.05 µm Size distribution: CV <3% BSA as blocking protein 	<ul style="list-style-type: none"> Isoelectric point: pH 5.0 Low charge (–10 mV, at pH 7) Iron content (ferrites): 26% (37%) Low sedimentation rate and faster reaction kinetics compared to Dynabeads M-280 or M-270 beads 	<ul style="list-style-type: none"> Immunoassays Chromatin or RNA immunoprecipitation (ChIP or RIP) Protein purification Phage display Biopanning Cell isolation Well suited for automated applications
Dynabeads M-270 Streptavidin	Free biotin: >950 pmol/mg beads Biotinylated Ig: 5–10 µg/mg beads	<ul style="list-style-type: none"> Hydrophilic bead surface Based on carboxylic acid beads Diameter: 2.8 µm Size distribution: CV <3% No blocking proteins used 	<ul style="list-style-type: none"> Isoelectric point: pH 4.5 High charge (–50 mV, at pH 7) Iron content (ferrites): 14% (20%) Low aggregation of beads in high-salt solutions 	<ul style="list-style-type: none"> Protocols that require GTC lysis or high-salt concentrations Preparation of single-stranded DNA Immunoassays with hydrophobic targets
Dynabeads MyOne Streptavidin C1	Free biotin: >2,800 pmol/mg beads Biotinylated Ig: 15–20 µg/mg beads	<ul style="list-style-type: none"> Hydrophilic bead surface Based on carboxylic acid beads Diameter: 1.05 µm Size distribution: CV <3% No blocking proteins used Tween™ 20 surfactant in the buffer 	<ul style="list-style-type: none"> Isoelectric point: pH 5.2 Medium charge (–35 mV, at pH 7) Iron content (ferrites): 26% (37%) Low sedimentation rate and faster reaction kinetics compared to Dynabeads M-280 or M-270 beads Low aggregation 	<ul style="list-style-type: none"> Preparation of single-stranded DNA High-throughput nucleic acid cleanup protocols Sample preparation of proteins for mass spectrometry Well suited for automated applications
Dynabeads Streptavidin for <i>In Vitro</i> Transcription	Free biotin: >500 pmol/mg beads Recommended binding of dsDNA template for optimal <i>in vitro</i> transcription: 1–3 µg/mg beads	<ul style="list-style-type: none"> Hydrophilic bead surface Based on carboxylic acid beads Diameter: 1.05 µm Size distribution: CV <3% Iron content (ferrites): 32% (45%) 	<ul style="list-style-type: none"> No blocking proteins used RNase-free, non-animal-derived raw materials Optimized to ease automation: faster collection with magnet, better handling, and improved bead pellet 	<ul style="list-style-type: none"> Immobilization of biotinylated DNA template for use in <i>in vitro</i> transcription mRNA synthesis Well suited for automated applications

Instant capture of any biotinylated biomolecule

- No centrifugation, precipitation, or columns
- In-solution reaction with rapid kinetics
- Excellent mechanical and chemical stability
- Remove variability and increase consistency
- For automated isolation of biotinylated DNA, RNA, proteins, or cells

Dynabeads streptavidin products are the gold standard for capturing, isolating, and handling biotinylated molecules. Invented in Norway and used in laboratories worldwide for more than 30 years, these groundbreaking magnetic beads are undoubtedly attractive for a wide variety of applications.

Isolate any biomolecule— just add your biotinylated ligand

Over the past 30 years, streptavidin-coupled Dynabeads products have been widely used and are cited in over 30,000 papers for diverse manual and automated applications.

Easy handling

Magnetic separation is surprisingly easy. No tedious centrifugation, precipitation, filtration, or columns are needed. Magnetic handling enables easy washing, separation, and concentration of your target. Excellent dispersion abilities and the lack of magnetic remanence make Dynabeads streptavidin products ideal for manual and automated protocols, including on microfluidic systems. Depending on your specific application and target molecule, a direct or indirect capture method can be applied (Figure 1).

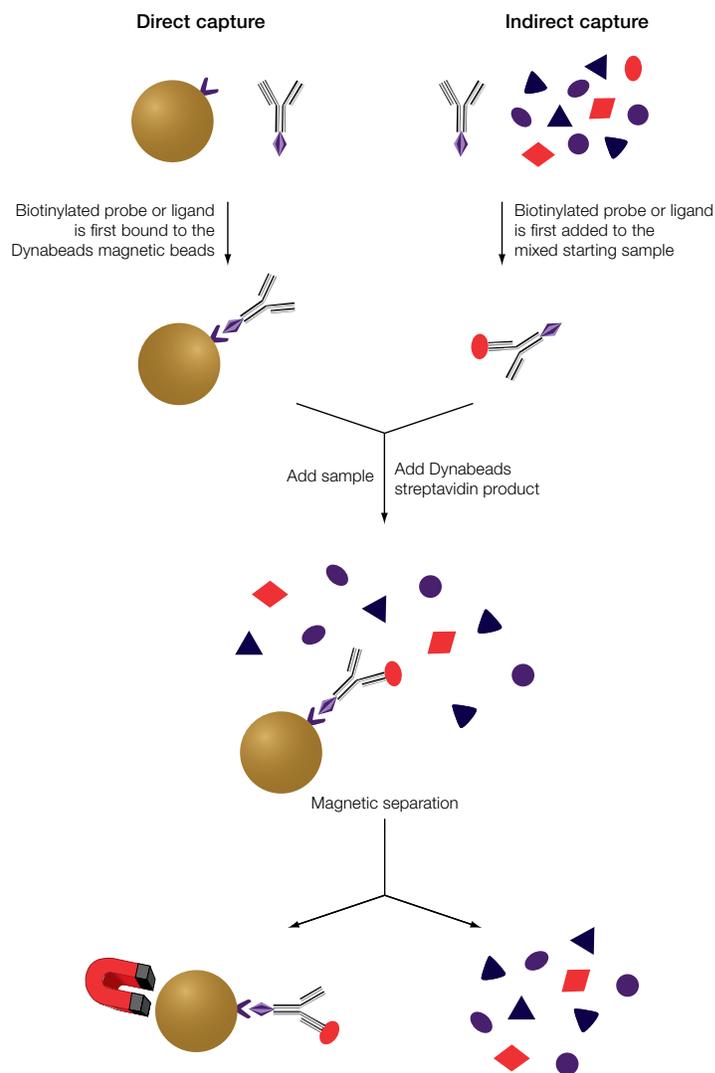


Figure 1. Direct and indirect approaches for magnetic separation. For direct capture, the target-specific ligand is bound to the Dynabeads streptavidin magnetic beads and then added to the sample. For some applications, this enables reuse of the beads, thereby reducing costs. For indirect capture, the ligand is first allowed to bind to the target, prior to addition of Dynabeads streptavidin magnetic beads. This can be beneficial when the concentration of the target is low, the specific affinity is weak, or the binding kinetics are slow.



Fast and flexible

Dynabeads streptavidin beads enable instant and efficient capture of biotinylated molecules via rapid liquid-phase kinetics. This can increase speed and sensitivity compared to filters and plate-based approaches (Figure 2). Dynabeads products are truly spherical and have a large surface area per unit volume, which helps ensure high and constant binding capacity. Figure 3 highlights some selected application examples.

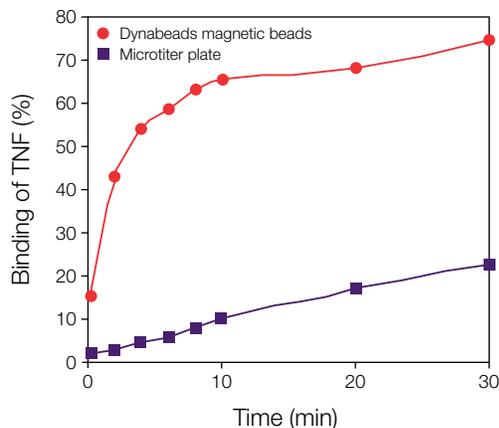
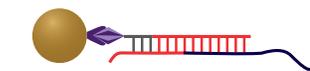


Figure 2. Dynabeads streptavidin beads have exceptional binding kinetics compared to traditional microtiter plates. The graph shows the percent binding of tumor necrosis factor (TNF) to immobilized antibody as a function of time. Courtesy of Dr. N-B Liabakk, Norwegian University of Science and Technology, Trondheim, Norway.



Sequence-specific capture

- Low-abundance cDNA from libraries
- Mutated sequences
- RNA and DNA infectious agents
- Microsatellite enrichment



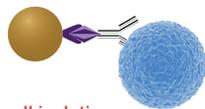
Immobilized DNA/cDNA

- DNA- and RNA-binding protein isolation
- Solid-phase DNase footprinting
- Solid-phase S1 nuclease mapping
- Subtractive hybridization
- Differential display
- Limes
- 5' RACE
- SAGE
- TOGA
- RAGE



Single-stranded template

- Solid-phase sequencing
- Pyrosequencing
- MALDI-MS
- Probe generation
- Allele-specific extension
- *In vitro* mutagenesis



Specific-cell isolation

- Cell culture
- Flow cytometry
- Cell-cell interactions
- Chemokine and immunological assays
- Bacterial pathogen detection
- Molecular analyses



Protein purification

- Intact protein complexes
- Active enzymes
- Immunoprecipitation
- Protein interaction studies
- Protein depletion
- SDS-PAGE
- MALDI-TOF



Immunoassays

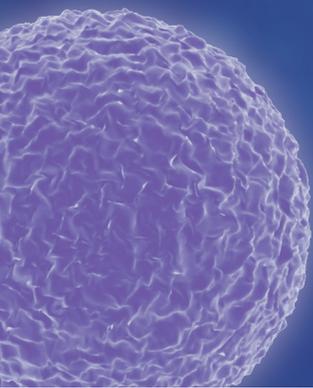
- Competitive and noncompetitive
- Homogeneous and heterogeneous
- Sandwich assays



Biopanning

- Phage display
- Cell-based screening
- SELEX
- Affibody selection
- Drug screening

Figure 3. Selected applications using Dynabeads streptavidin products.



Boost your library preparation

Stand-alone Dynabeads magnetic beads for target enrichment deliver reproducible NGS results and high sensitivity and purity of enriched target sequences (Figures 4 and 5).



Figure 4. NGS workflow. Dynabeads Streptavidin for Target Enrichment is intended for enrichment of target sequences hybridized to biotinylated probes immobilized on streptavidin-coated magnetic beads (target enrichment step shown in red).

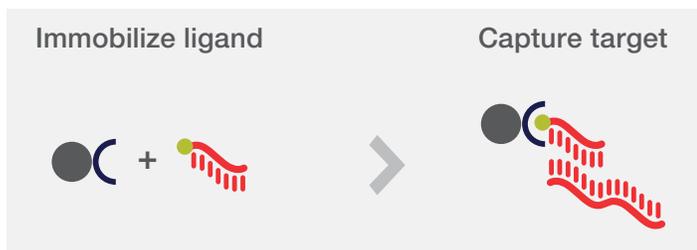


Figure 5. Target enrichment using Dynabeads magnetic beads.

- **Direct technique**—The biotinylated nucleic acid probe first binds to Dynabeads magnetic beads and then hybridizes with the target.
- **Indirect technique**—The biotinylated nucleic acid probe hybridizes with the target, and it is then enriched using Dynabeads magnetic beads.



Accelerate your vaccine research and development

Designed to minimize the effort and cost of plasmid preparation, Dynabeads Streptavidin for *In Vitro* Transcription offers simple, flexible, and automation-ready mRNA synthesis (Figure 6). The DNA template can be reused at least 5 times with consistent mRNA yield during cycling (Figure 7).

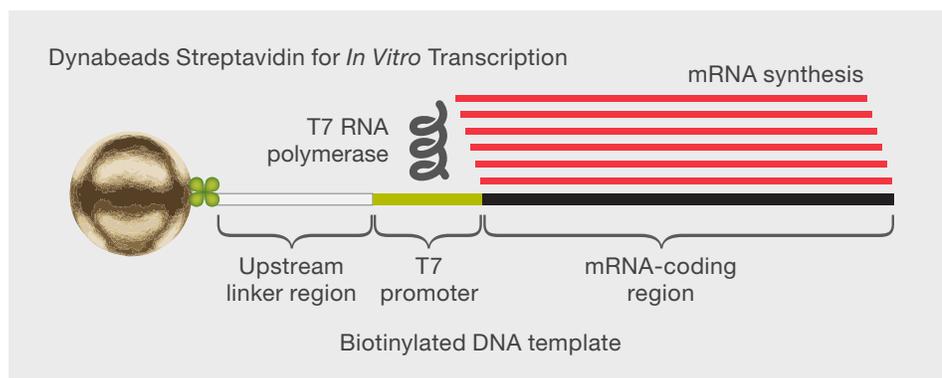


Figure 6. mRNA synthesis by *in vitro* transcription.

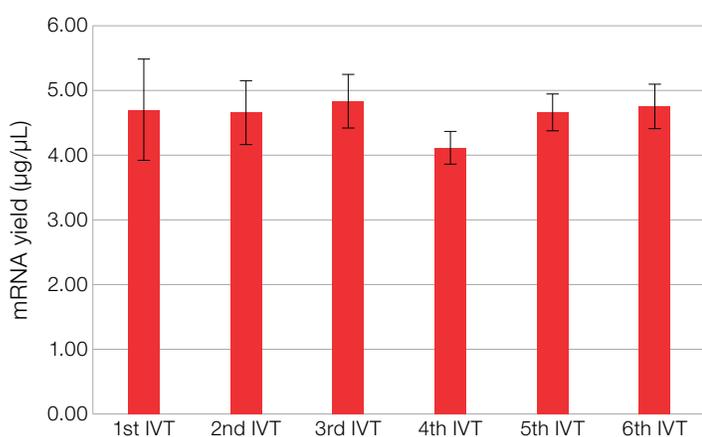


Figure 7. Consistent mRNA yield from a DNA template that has been used 6 times with Dynabeads Streptavidin for *In Vitro* Transcription.

Robust and gentle

Dynabeads streptavidin products feature excellent mechanical and chemical stability. No iron leakage or inhibition of enzyme activity are observed. The monolayer of recombinant streptavidin helps ensure that the vast majority of biotin-binding sites are left sterically available for binding.

The technology is also extremely gentle, allowing isolation of proteins as well as large or unstable complexes. The native state of proteins is preserved, and fragile cells remain viable. Flexible volumes may be used, enabling isolation of low-abundance molecules. A high signal-to-noise ratio also contributes to increased sensitivity.



Absolute reproducibility

All Dynabeads products are produced with full control of parameters such as bead size, surface area, iron content, and magnetic mobility. The absence of excess physically adsorbed streptavidin helps ensure negligible leakage and minimal batch-to-batch variation. The uniform characteristics and unique reproducibility within (CV <3%) and between batches can help reduce costs associated with quality control testing (Figure 8). You can rely on the consistent performance of Dynabeads products for your research projects.

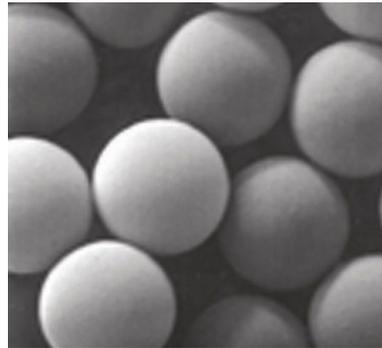
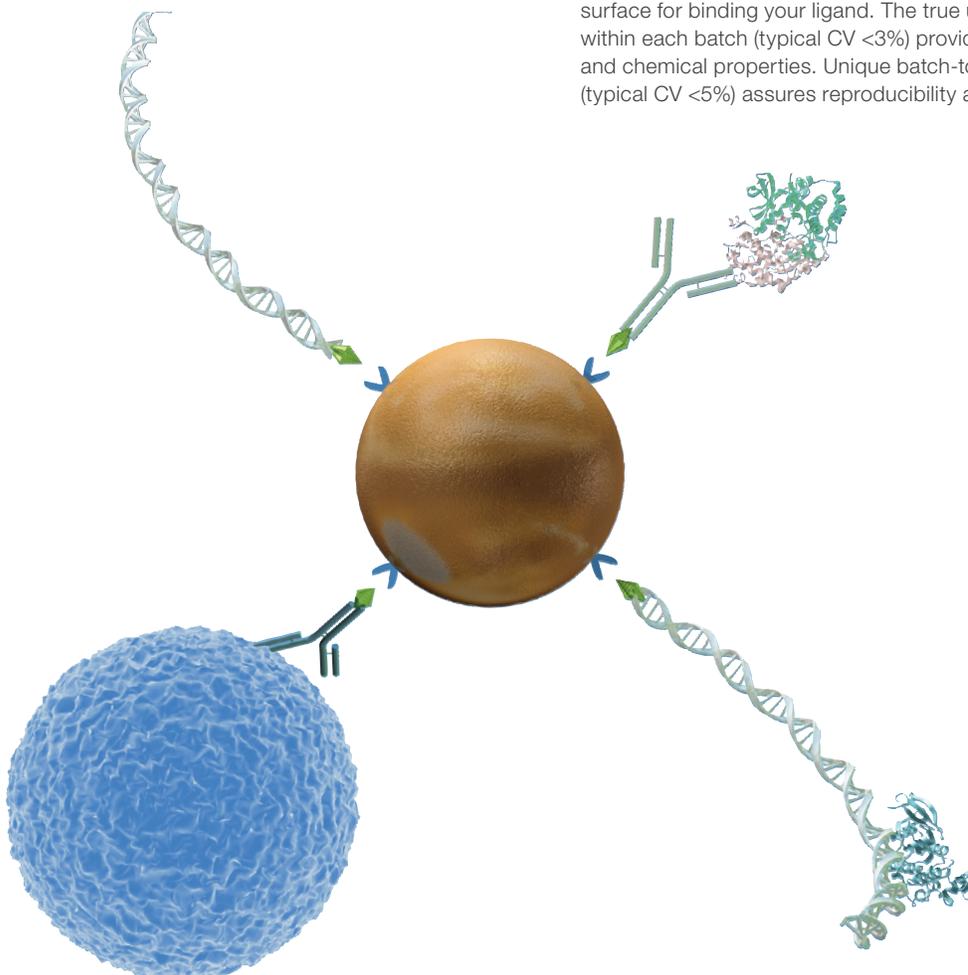


Figure 8. Monosized superparamagnetic Dynabeads beads. Each bead has an even dispersion of magnetic material, encased within a thin polymer shell. This provides a specific and defined surface for binding your ligand. The true uniformity of all beads within each batch (typical CV <3%) provides consistent physical and chemical properties. Unique batch-to-batch reproducibility (typical CV <5%) assures reproducibility and quality of results.



Ordering information

Product	Quantity	Cat. No.
Dynabeads Streptavidin for Target Enrichment • 1 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophobic surface	2 mL	65605D
	10 mL	65606D
	50 mL	65607D
Dynabeads M-280 Streptavidin • 2.8 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophobic surface	2 mL	11205D
	10 mL	11206D
	100 mL	60210
Dynabeads M-280 Tosylactivated	2 mL	14203
	10 mL	14204
Dynabeads MyOne Streptavidin T1 • 1 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophobic surface	2 mL	65601
	10 mL	65602
	50 mL	65604D
Dynabeads MyOne Tosylactivated	2 mL	65501
	10 mL	65502
Dynabeads M-270 Streptavidin • 2.8 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophilic surface	2 mL	65305
	10 mL	65306
Dynabeads MyOne Streptavidin C1 • 1 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophilic surface	2 mL	65001
	10 mL	65002
Dynabeads Streptavidin for <i>In Vitro</i> Transcription • 1 µm magnetic beads with covalently coupled recombinant AOF streptavidin and a hydrophilic surface	2 mL	65005D
	10 mL	65006D
Dynabeads M-270 Carboxylic Acid	2 mL	14305D
	10 mL	14306D
Dynabeads Streptavidin Trial Kit • Contains 1 mL each of Dynabeads M-280 Streptavidin, MyOne Streptavidin T1, M-270 Streptavidin, and MyOne Streptavidin C1	4 x 1 mL	65801D
Dynabeads MyOne Carboxylic Acid	2 mL	65011
	10 mL	65012
Dynabeads kilobaseBINDER Kit • Contains 1 mL Dynabeads M-280 Streptavidin, Binding and Washing Solution sufficient for 200 isolations	1 kit	60101
Dynabeads Biotin Binder • For cell isolation or depletion, using your own biotinylated antibody	5 mL	11047
CELLection Biotin Binder Kit • For positive cell isolation and detachment, using your own biotinylated antibody	5 mL	11533D
Related products		
DynaMag magnets	See magnet recommendations at thermofisher.com/magnets	
HulaMixer Sample Mixer	Holds 0.5–50 mL tubes	15920D

Learn more at [thermofisher.com/streptavidindynabeads](https://www.thermofisher.com/streptavidindynabeads)

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