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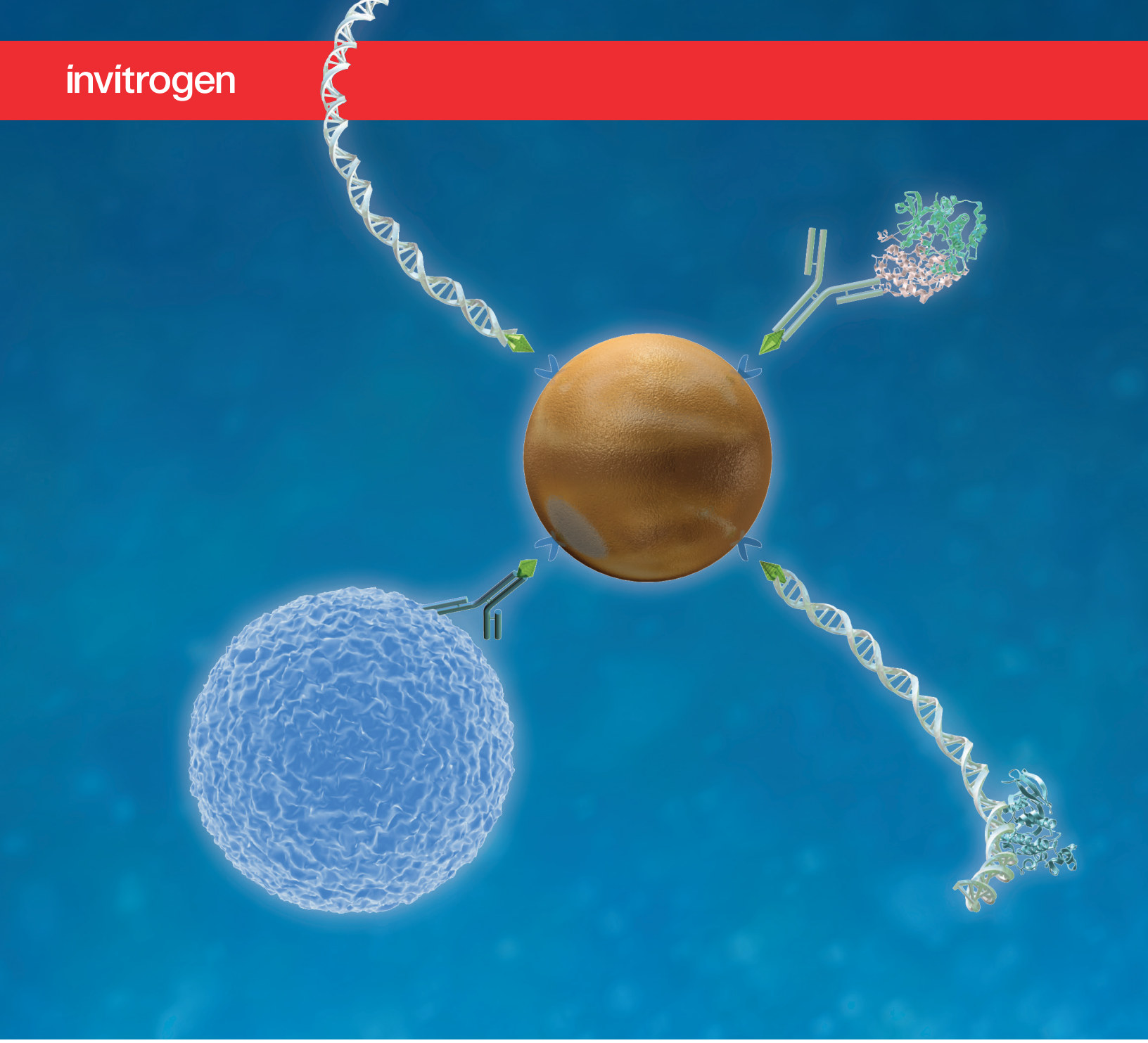


# Dynabeads streptavidin products for manual and automated protocols

## Uniform beads for uniform results



ThermoFisher SCIENTIFIC

# Choose your favorite

Four different types of Dynabeads streptavidin products are available (Table 1). Your choice should be guided by your sample and target properties, buffers and solutions applied, and specific downstream application needs.

Invitrogen™ Dynabeads™ M-280 Streptavidin and MyOne™ Streptavidin T1 beads are commonly used for protein and nucleic acid 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 rate, making them ideal for automated applications.

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

| Product | Binding capacities | Characteristics and properties | Ideal for |
|---|---|---|---|
| Dynabeads M-280 Streptavidin | Free biotin:<br>650–900 pmol/mg beads<br><br>Biotinylated Ig:<br>Up to 10 µg/mg beads | • Hydrophobic bead surface<br>• Based on tosylactivated beads<br>• Diameter: 2.8 µm<br>• Size distribution: CV <3%<br>• BSA as blocking protein<br>• Isoelectric point: pH 5.0<br>• Low charge (–10 mV, at pH 7)<br>• Iron content (ferrites): 12% (17%) | • Immunoassays<br>• Purification of DNA-/RNA-binding proteins<br>• Protein purification<br>• Phage display<br>• Biopanning<br>• Cell isolation |
| Dynabeads MyOne Streptavidin T1 | Free biotin:<br>950–1,500 pmol/mg beads<br><br>Biotinylated Ig:<br>Up to 20 µg/mg beads | • Hydrophobic bead surface<br>• Based on tosylactivated beads<br>• Diameter: 1.05 µm<br>• Size distribution: CV <3%<br>• BSA as blocking protein<br>• Isoelectric point: pH 5.0<br>• Low charge (–10 mV, at pH 7)<br>• Iron content (ferrites): 26% (37%)<br>• Low sedimentation rate and faster reaction kinetics compared to M-280/M-270 beads | • Immunoassays<br>• Purification of DNA-/RNA-binding proteins<br>• Protein purification<br>• Phage display<br>• Biopanning<br>• Cell isolation<br>• Well suited for automated applications |
| Dynabeads M-270 Streptavidin | Free biotin:<br>≥950 pmol/mg beads<br><br>Biotinylated Ig:<br>Up to 10 µg/mg beads | • Hydrophilic bead surface<br>• Based on carboxylic acid beads<br>• Diameter: 2.8 µm<br>• Size distribution: CV <3%<br>• No blocking proteins used<br>• Isoelectric point: pH 4.5<br>• High charge (–50 mV, at pH 7)<br>• Iron content (ferrites): 14% (20%)<br>• Low aggregation of beads in high-salt solutions | • Sequence-specific DNA/RNA capture in nucleic acid research<br>• Protocols that require GTC lysis or high-salt concentrations<br>• Preparation of single-stranded DNA<br>• Immunoassays with hydrophobic targets |
| Dynabeads MyOne Streptavidin C1 | Free biotin:<br>≥2,500 pmol/mg beads<br><br>Biotinylated Ig:<br>Up to 20 µg/mg beads | • Hydrophilic bead surface<br>• Based on carboxylic acid beads<br>• Diameter: 1.05 µm<br>• Size distribution: CV <3%<br>• No blocking proteins used<br>• Tween 20 in the buffer<br>• Isoelectric point: pH 5.2<br>• Medium charge (–35 mV, at pH 7)<br>• Iron content (ferrites): 26% (37%)<br>• Low sedimentation rate and faster reaction kinetics compared to M-280/M-270 beads<br>• Low aggregation | • Sequence-specific DNA/RNA capture in nucleic acid research<br>• Preparation of single-stranded DNA<br>• High-throughput nucleic acid cleanup protocols<br>• Sample preparation of proteins for mass spectrometry<br>• Well suited for automated applications |

# Instant capture of any biotinylated biomolecule

## The gold standard for magnetic separations

- 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

Invitrogen™ 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 20 years, these groundbreaking magnetic beads are irresistibly 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 20,000 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 as well as automated protocols, including microfluidic systems. Depending on your specific application and target molecule, a direct or indirect capture method is applied (Figure 1).

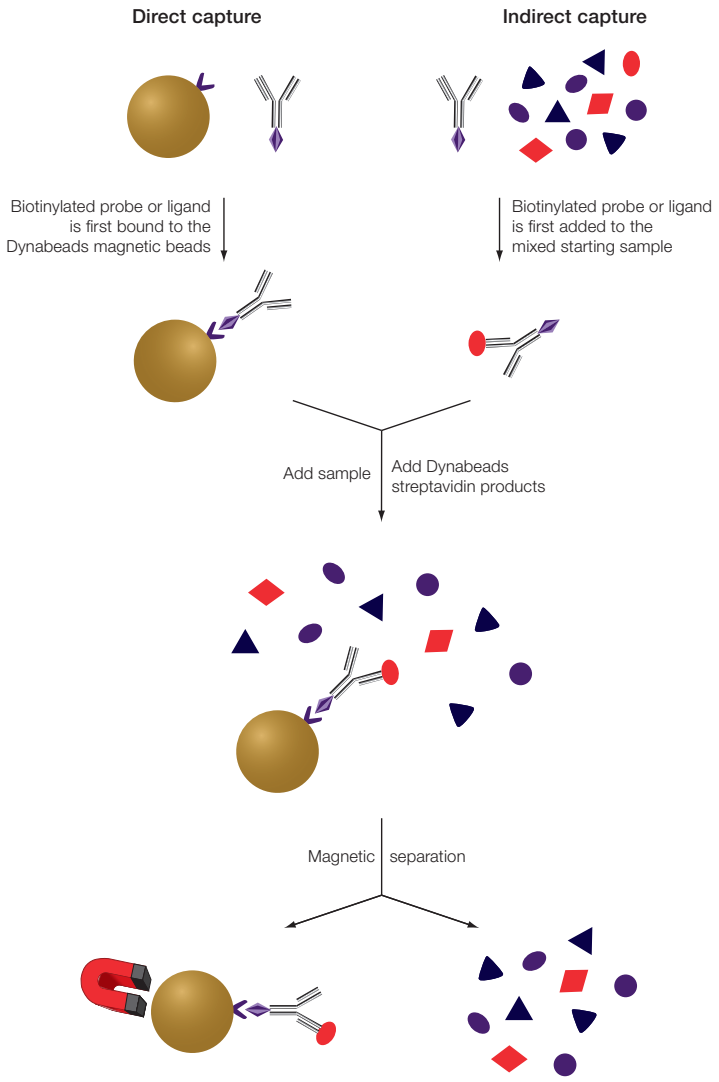



**Figure 1. Direct and indirect approach for magnetic separation.** In direct capture, the target-specific ligand is bound to the Dynabeads streptavadin magnetic bead and then added to the sample. For some applications, this enables reuse of the beads, thereby reducing costs. In indirect capture, the ligand is first allowed to bind to the target, prior to addition of Dynabeads streptavidin magnetic bead. 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 products enable instant and efficient capture of biotinylated molecules via rapid liquid-phase kinetics. This increases 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. This ensures a high and constant binding capacity. Figure 3 highlights some selected application examples.

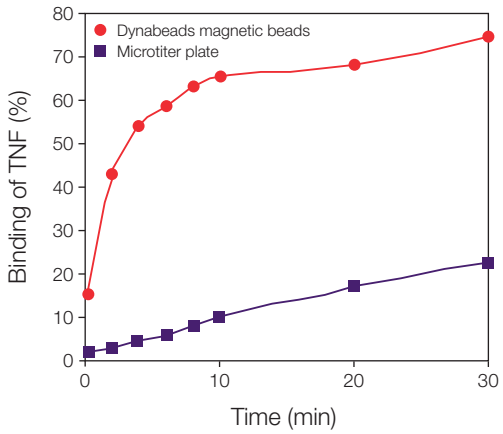



**Figure 2. Dynabeads streptavidin beads binding kinetics are superior to traditional microtiter plates.** The graph shows the percent binding of tumor necrosis factor (TNF) to immobilized antibody as a function of time. Courtesy of Dr. N-B Liabakk, Norwegian University of Science and Technology, Trondheim,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

**Sequence-specific capture**

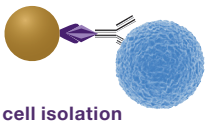
- Low-abundance cDNA from libraries
- Mutated sequences
- RNA and DNA infectious agents
- Microsatellite enrichment

**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

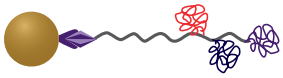
**Single-stranded template**

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



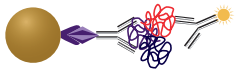
**Specific cell isolation**

- 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.**

## Robust and gentle

Dynabeads streptavidin products feature excellent mechanical and chemical stability. No iron leakage. No inhibition of enzyme activity. The monolayer of recombinant streptavidin ensures 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 ensures negligible leakage, and secures a minimal batch-to-batch variation. The uniform characteristics and unique reproducibility within (CV <3%) and between batches reduce costs associated with quality control testing (Figure 4). Whether for your research project or for IVD testing activities, you can rely on the consistent performance of Dynabeads products.

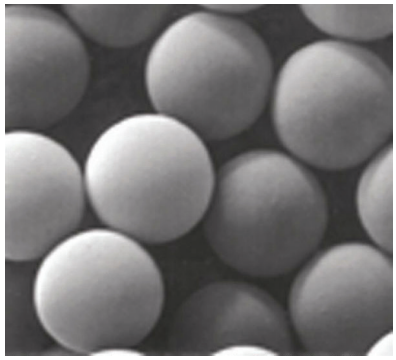
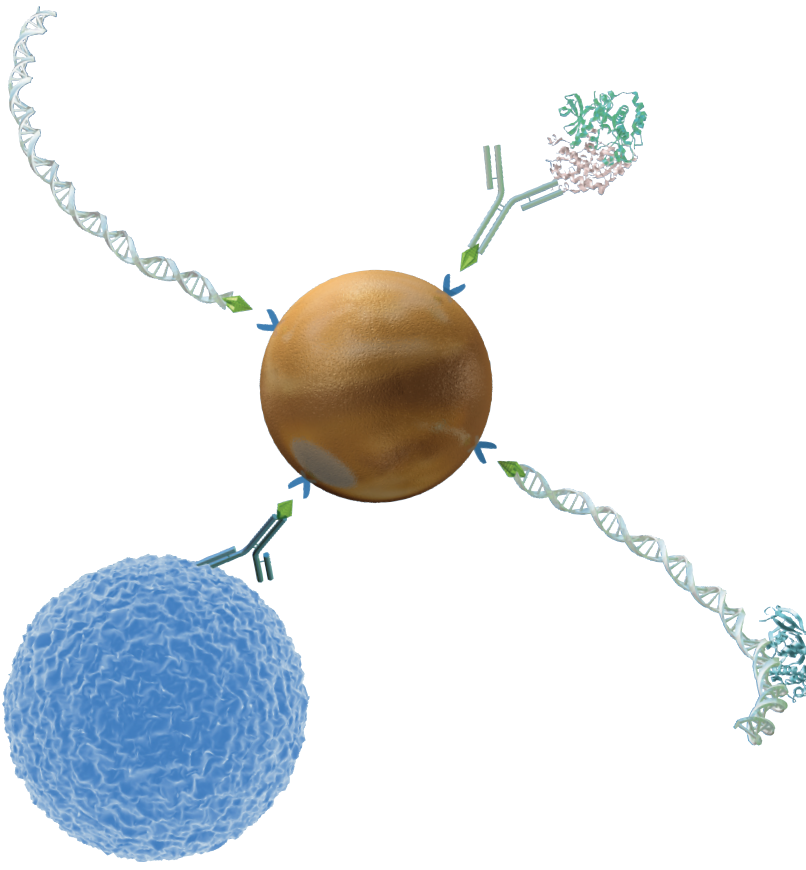


**Figure 4. Monosized superparamagnetic Dynabeads magnetic beads.** Each bead has an even dispersion of magnetic material, encased within a thin polymer shell. This provides a specific and defined surface for binding your ligand. The true uniformity of all beads within each batch (typical CV <3%) provides consistent physical and chemical properties. Unique batch-to-batch reproducibility (typical CV <5%) secures reproducibility and quality of results.



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## Ordering information

| Product | Quantity | Cat. No. |
|---|---|---|
| Dynabeads M-280 Streptavidin<br>• 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<br>• 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<br>• 2.8 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophilic surface | 2 mL | 65305 |
| | 10 mL | 65306 |
| Dynabeads MyOne Streptavidin C1<br>• 1 µm magnetic beads with covalently coupled recombinant streptavidin and a hydrophilic surface | 2 mL | 65001 |
| | 10 mL | 65002 |
| Dynabeads M-270 Carboxylic Acid | 2 mL | 14305D |
| | 10 mL | 14306D |
| Dynabeads Streptavidin Trial Kit<br>• Contains 1 mL each of the four bead types listed above | 4 x 1 mL | 65801D |
| Dynabeads MyOne Carboxylic Acid | 2 mL | 65011 |
| | 10 mL | 65012 |
| Dynabeads kilobaseBINDER Kit<br>• Contains 1 mL Dynabeads M-280 Streptavidin, Binding and Washing Solution sufficient for 200 isolations | 1 kit | 60101 |
| Dynabeads Biotin Binder<br>• For cell isolation or depletion, using your own biotinylated antibody | 5 mL | 11047 |
| CELLection Biotin Binder Kit<br>• 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 |

See the enormous number of references by searching for "Dynabeads streptavidin" at **scholar.google.com**