



BioMag® Nuclease-Free Streptavidin

BioMag® suspensions are a series of products containing superparamagnetic particles. BioMag particles are irregularly shaped, with an average diameter of 1.6 µm, and consist of an iron oxide core with a silane coating. The surface of the particle is coated with amine or carboxyl groups, facilitating the covalent attachment of proteins, glycoproteins, secondary antibodies, and other ligands, with retention of biological activity. The particles' irregular shape provides a large surface area, ensuring a high binding efficiency.

BioMag particles are superparamagnetic — they respond to magnetic fields but do not retain magnetic properties upon removal of the magnetic field. This inability to become magnetized permits magnetic extraction without magnetically induced aggregation. Rapid and efficient removal of BioMag particles from suspension is achieved by the application of an external magnetic field.

Specifications

Form	Magnetic particle suspension (1 mg/ml) in phosphate-buffered saline containing EDTA and 0.08% sodium azide.
BioMag concentration	1 mg/ml
Binding capacity	1 ml (1 mg) BioMag Nuclease-Free Streptavidin binds >2.0 µg biotin per milligram of particles.*
Storage and stability	BioMag Nuclease-Free Streptavidin can be stored at 2–8°C until the expiration date. Do not freeze. Do not dry. Centrifugation should only be used if it is the last step of a procedure, i.e., if resuspension of the BioMag particles is not required. Freezing, drying, and centrifugation result in extensive aggregation of the BioMag particles and a loss of binding activity.
Safety information	When working with chemicals always wear a suitable lab coat, disposable gloves, and protective goggles. For more information please consult the appropriate material safety data sheet, available online at www.qiagen.com/ts/msds.asp

* 1 ml (5 mg) BioMag Nuclease-Free Streptavidin can also be used to bind: >1000 pmol of a 20mer biotinylated oligonucleotide, >200 pmol of a 100mer biotinylated oligonucleotide, >70 pmol of a 300 bp 5'-biotinylated ds DNA, >25 pmol of a 1000 bp 5'-biotinylated dsDNA.

Applications

BioMag Nuclease-Free Streptavidin preparations are standard BioMag particles coated with streptavidin and are highly suited for use in DNA probe assays, mRNA isolation, and for rapid separation of a biotinylated component from solution. They are also well suited for use in enzyme immunoassays and cell sorting. Please contact QIAGEN Technical Services for more information on cell separation protocols for BioMag Nuclease-Free Streptavidin.

Protocols

These protocols are a general guide to using BioMag Nuclease-Free Streptavidin, and are applicable in most cases. We recommend optimizing the conditions for your research.

Attachment of biotinylated oligonucleotides and dsDNA

This procedure can be used to bind biotinylated oligonucleotides and double stranded DNA.

- 1. Pipet the required volume (see Specifications) of BioMag Nuclease-Free Streptavidin into a nuclease-free microcentrifuge tube. Separate the magnetic particles for 30 seconds, using a magnetic separator (>20 megaoersted).**
Appropriate magnets are available from QIAGEN; see ordering information.
- 2. Remove and discard the supernatant. Resuspend the BioMag Nuclease-Free Streptavidin particles in half the volume used in step 1 of Binding Buffer (20 mM Tris-Cl, 1.0 M NaCl, 1 mM EDTA, 0.02% Triton® X-100; pH 7.8).**
- 3. Incubate the appropriate amount of a biotinylated oligonucleotide (see Specifications) with the resuspended BioMag Nuclease-Free Streptavidin for 15 minutes at room temperature (15–25°C). Mix gently.**
- 4. Separate the magnetic particles for 30 seconds using a magnetic separator. Discard the supernatant. Wash the magnetic particles twice with an appropriate amount of Binding Buffer.**
Note: Do not dry the magnetic particles.
- 5. Resuspend the magnetic particles in DEPC-treated water.**
The oligonucleotide-coated particles are now suitable for use in downstream applications.

Purification of mRNA from total RNA

1. Pipet required amount of BioMag Nuclease-Free Streptavidin into a nuclease-free microcentrifuge tube. Separate the magnetic particles for 30 seconds, using a magnetic separator (>20 megaoersted).
Appropriate magnets are available from QIAGEN; see ordering information.
2. Remove and discard the supernatant. Resuspend the BioMag Nuclease-Free Streptavidin particles in half the volume used in step 1 of mRNA Binding Buffer (20 mM Tris-Cl, 0.5 M NaCl; pH 8.0).
3. Incubate an appropriate amount of a 5'-biotinylated oligonucleotide (dT) with the resuspended BioMag Nuclease-Free Streptavidin from step 2 for 15 minutes at room temperature (15–25°C).
4. Separate the magnetic particles for 30 seconds using a magnetic separator. Discard the supernatant. Wash the oligonucleotide-bound magnetic particles twice with an appropriate amount of Binding Buffer.
Note: Do not dry the magnetic particles.
5. Add DEPC-treated water to the total RNA sample so that the final volume is 90 µl.
6. Incubate the total RNA sample at 55°C for 5 minutes to disrupt secondary RNA structures.
7. Add 10 µl of 5 M NaCl to the total RNA sample, to achieve a final concentration of 0.5 M NaCl.
8. Add the total RNA to the washed magnetic particles from step 4. Mix gently and allow to hybridize for 3 minutes at room temperature.
9. Separate the magnetic particles for 30 seconds using a magnetic separator. Discard the supernatant. Wash the magnetic particles twice with an appropriate amount of Wash Buffer (7 mM Tris-Cl, 0.17 M NaCl; pH 8.0).
10. Elute bound mRNA with appropriate amount of DEPC-treated water for 2 minutes at 55°C. Separate the magnetic particles for 30 seconds using a magnetic separator. Transfer the supernatant to a nuclease-free microcentrifuge tube.
10. Elute bound mRNA with appropriate amount of DEPC-treated water for 2 minutes at 55°C. Separate the magnetic particles for 30 seconds using a magnetic separator. Transfer the supernatant to a nuclease-free microcentrifuge tube.
11. Repeat step 10. Transfer supernatant to the same tube as before.

Ordering Information

Product	Contents	Cat. No.
BioMag Nuclease-Free Streptavidin (10 ml)	BioMag Nuclease-Free Streptavidin suspension (1 mg/ml)	311732
Accessories		
Single Tube Magnet	Magnet for separating magnetic particles in a 1.5 ml or 2 ml tube	36910
12-Tube Magnet	Magnet for separating magnetic particles in 12 x 1.5 ml or 2 ml tubes	36912
15 ml/50 ml Tube Magnet	Magnet for separating magnetic particles in 5 x 15 ml and 3 x 50 ml tubes	36935
Flask Magnet	Magnet for separating magnetic particles in a cell culture flask	36937

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