

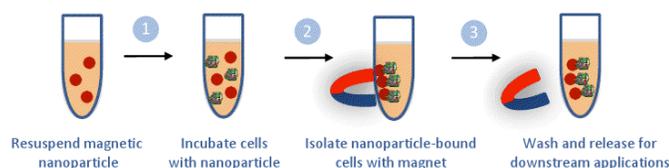
MagVigen™ Streptavidin Nanoparticles

Product Description

MagVigen™ Streptavidin magnetic nanoparticles can universally bind to any biotinylated biomolecules, such as antibody, protein, peptide, DNA, etc., through high affinity interaction between streptavidin and biotin. The MagVigen™ Streptavidin-biotin-biomolecule complex is easy to be separated from unbound biotin-biomolecule using a magnet, therefore providing a quick and neat way to tag biomolecules with magnetic nanoparticles. The purified nanoparticle-biomolecule complex can be used in a variety of downstream bio-separation processes: protein purification, immunoprecipitation, cell isolation or depletion, and molecular detection.

Cell Enrichment

MagVigen™ Streptavidin magnetic nanoparticles are ideal for isolation or depletion of cells (e.g. CTCs, stem cells) from a mixture of cell population obtained from tissues or organs. The isolated cells are viable and can be further cultured or used for downstream molecular analysis such as mRNA isolation and RT-PCR. Cell separation with MagVigen™ eliminates the use of columns, so cells are not exposed to the mechanical stress from passing through the column matrix. Magnetically separated cells are highly purified and retain their viability, ideal for downstream applications.



Advantages of MagVigen™ Streptavidin for Cell Enrichment

- Easy and quick to make nanoparticle-antibody conjugates through streptavidin-biotin association
- Simple and gentle cell separation
- Consistent, high quality results
- High binding capacity
- High biocompatibility
- Low non-specific binding

Product Contents

- MagVigen™ Streptavidin nanoparticles (Cat# 21005) are provided in phosphate buffered saline (PBS), pH 7.4. Each vial contains 1 ml of solution with a particle concentration of 1 mg/ml, which is enough for isolating approximately 50 million cells.
- Washing Buffer (10X), Cat# A20001
- Magnet, Cat# A20003
- MagVigen™ Streptavidin Kit, Cat# K21005

All materials except the magnet should be stored at 4°C for up to 6 months.

Protocol

This protocol provides a general guidance for cell enrichment using MagVigen™ Streptavidin nanoparticles. Please adjust the amount of reagents for specific application.

1. Dilute 10X Washing Buffer with PBS to make 1X Washing Buffer.
2. Vortex the MagVigen™ Streptavidin nanoparticles in the vial for 10-20 seconds before use.

3. Aliquot enough nanoparticle solution for enrichment experiment. **Note:** 20 μ l is generally sufficient for the enrichment of up to 1×10^6 cells. Cell capture efficiency can be affected by factors such as frequency of target cells in the cell population, density of antigen/epitope expressed on the cell surface, and the antibody affinity. Adjust the amount of nanoparticles accordingly.
4. Wash nanoparticles with 500 μ l 1X Washing Buffer twice. Separate the nanoparticles from the solution by placing the magnet on the side of the tube for 2-5 min and remove the supernatant carefully (with magnet still on the side).
5. Add biotinylated antibody to the nanoparticle and incubate for 15-30 minutes using a sample rotator. **Note:** 20 μ l nanoparticle could bind to 50-1000 ng antibody.
6. Wash nanoparticle-antibody conjugates with 500 μ l 1X Washing Buffer twice to remove unbound antibody.
7. Resuspend the nanoparticle-antibody conjugates in 1X Washing Buffer (20-50 μ l) and add it to the cell sample to a total volume of 1-5 ml.
8. Incubate the nanoparticles with the cell sample on an orbital shaker for 30-60 minutes at room temperature.
9. After incubation, use a magnet to separate the nanoparticles (with bound cells) from the solution, and carefully remove the supernatant.
10. Wash the nanoparticles with 500 μ l 1X Washing Buffer twice.
11. The isolated cells can be either kept on ice for immediate downstream applications or suspended in cell culture medium to grow.

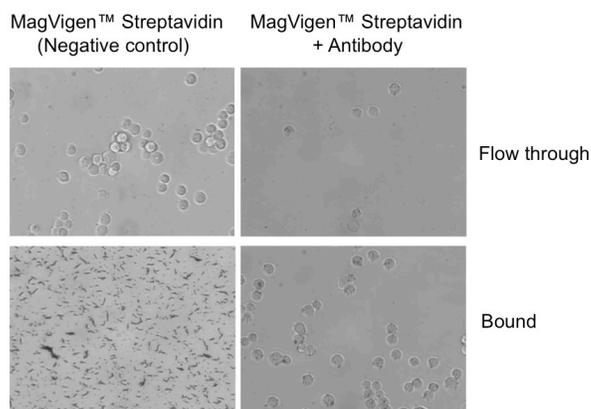


Figure 1. Enrichment of tumor cells by MagVigen™ Streptavidin-antibody nanoparticles. Representative images from experiment starting from 5×10^5 cells are shown.

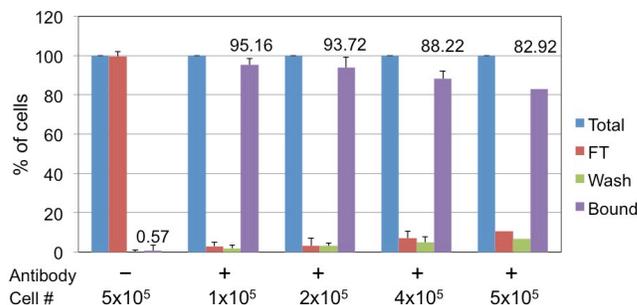


Figure 2. Magnetic cell separation using MagVigen™ Streptavidin nanoparticles shows high separation capacity and low non-specific binding.

Other applications

Please refer to steps 1-6 in **Cell Enrichment** for making MagVigen™ Streptavidin-biomolecule complex and optimize the concentration of nanoparticles for specific application.