

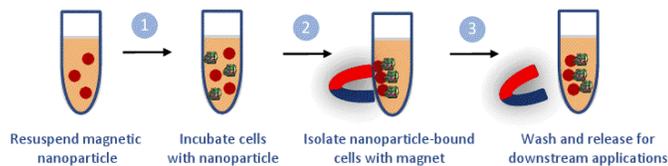
## MagVigen™ - Streptavidin conjugates

Cat#21005

### Product Description

MagVigen™-Streptavidin magnetic nanoparticles can universally bind to any biotinylated biomolecules (ex. antibody, protein, peptide, DNA) through high affinity interaction between streptavidin and biotin. The MagVigen™-Streptavidin-biotin-biomolecule complex can be easily separated from unbound biotin-biomolecule using a magnetic rack (Cat#A20006). This provides 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 (ex. protein purification, immunoprecipitation, cell isolation or depletion, and molecular detection.)

MagVigen™- Streptavidin are ideally used together with mouse antibody for isolation 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™ nanoparticles 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-primary mouse antibody conjugates
- Simple and gentle cell separation
- Strong and long-lasting fluorescent signal
- Consistent, high quality results
- High binding capacity
- High biocompatibility
- Low non-specific binding

### Product Contents

- MagVigen™- Streptavidin (Cat# 21005) are provided in phosphate buffered saline (PBS) containing 0.05% NaN<sub>3</sub>, 0.01% Tween 20. pH 7.4. Each vial contains 1 ml of solution with particle concentration of 2 mg/ml, which is enough for binding 50 million cells.

Nanoparticle size: 200-500 nm measured using Dynamic Light Scattering.

Polydispersity index < 0.2.

Capacity: 50µg biotin-antibody/ml of nanoparticles

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

### Protocol

#### Cell Enrichment

This protocol provides a general guidance for enriching 10<sup>5</sup> cells using MagVigen™- Streptavidin magnetic nanoparticles. Please adjust the amount of reagents for specific application.

1. Gently vortex or pipette the MagVigen™- Streptavidin magnetic nanoparticles in the vial before use.
2. Aliquot 50 µl nanoparticle solution for enrichment experiment.  
**Note:** 50 µl is generally sufficient for the enrichment of 1-10x10<sup>5</sup> 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.
3. Wash nanoparticles with 500 µl of Washing Buffer twice. Separate the nanoparticles from the solution by placing the magnet on the side of the tube for 1-2 min and remove the supernatant carefully (with magnet still on the side).
4. Add 500 ng biotin-conjugated antibody (in a volume of 100-200 µl) to the nanoparticle and incubate for 30-60 minutes on a rotator.  
**Note:** 50 µl nanoparticles could bind ~200 ng of antibody.
5. Wash nanoparticle-antibody conjugates with 500 µl Washing Buffer twice to remove unbound antibody.
6. Resuspend the nanoparticle-antibody conjugates in Washing Buffer (50 µl) and add it to the cell sample to a total volume of 0.1-0.5 ml.
7. Incubate the nanoparticles with the cell sample on an orbital shaker for 30 minutes at room temperature.
8. After incubation, use a magnet to separate the nanoparticles (with bound cells) from the solution, and carefully remove the supernatant.
9. Wash the nanoparticle-cell complex with 500µl cell culture medium twice.
10. Isolated cells can be re-suspended in cell culture medium for downstream applications.

**Note:** Elution buffer can be used to elute the target protein or cells from MagVigen™-Streptavidin magnetic nanoparticles.

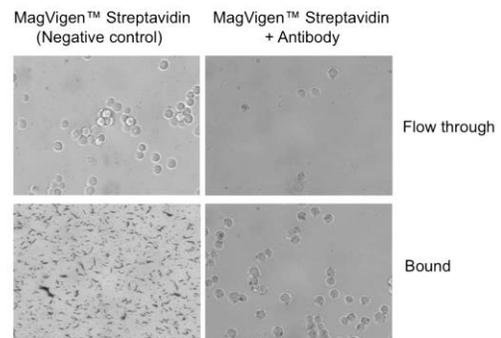


Figure 1. Enrichment of tumor cells by MagVigen™ Streptavidin-antibody nanoparticles. Representative images from experiment starting from 5x10<sup>5</sup> cells are shown.