

## MagVigen™ - Streptavidin DNA Capture

Cat# 61002/K61002

### Product Description

MagVigen™ Streptavidin DNA Capture nanoparticles can be used to capture specific RNA or DNA sequences directly from solution. The nanoparticles can bind to any biotinylated DNA through high affinity interaction between streptavidin and biotin. MagVigen™ Streptavidin DNA Capture nanoparticles feature efficient recovery of double-stranded and single-stranded DNA. DNA products are captured by the nanoparticles following a short incubation. The generated nanoparticle-oligo complex can be separated from the rest of the sample by magnet. The retained genomic material can be eluted from the nanoparticles using an elution buffer.

MagVigen™ Streptavidin DNA Capture nanoparticles enable the purification of DNA products from salts and other contaminants from assay samples, e.g. cell lysate, whole blood. The purified DNA products can be further analyzed by gel electrophoresis, PCR quantification and sequencing.

### Product Contents:

- Cat# 61002: MagVigen™ Streptavidin DNA Capture nanoparticles, 1ml

Cat# K61002 further includes:

- DNA Assay Buffer
- Binding Buffer 1
- Binding Buffer 2

All materials should be stored at 4°C. Shelf life: 6 months.

### Protocol

#### DNA Purification

This protocol was optimized for purification of biotinylated DNA sample from assay samples, e.g. cell lysate, whole blood or plasma.

#### DNA Capture

Prepare Magnetic Beads Re-dispersion Buffer:

1. Prepare Magnetic Beads Re-dispersion Buffer by adding 600 ul of DNA Assay Buffer into 1400 ul of H<sub>2</sub>O.

Prepare Wash Buffer:

2. Prepare Wash Buffer by adding 2.4 ml of DNA Assay Buffer into 17.6 ml of H<sub>2</sub>O.

Prepare Magnetic Beads:

3. Remove MagVigen™-Streptavidin nanoparticles from storage and bring them to room temperature.
4. Vortex MagVigen™-Streptavidin nanoparticles for 10-20 seconds before use.

Use 20ul of MagVigen™-Streptavidin nanoparticles for up to 100 picomole of biotinylated DNA.

5. Remove MagVigen™-Streptavidin nanoparticles and put into a clean 1.5ml reaction tube.
6. Collect MagVigen™ -Streptavidin nanoparticles using magnet and remove the supernatant.

*Note: A clear precipitate containing dark brown colored nanoparticles should become visible on the side of the micro-centrifuge tube.*

7. Resuspend the nanoparticles in equal volume of Magnetic Beads Re-disperse Buffer.

Hybridization Reaction:

8. Boil the sample at 95°C for 10 min, followed by plunging the sample tube into dry ice for 5 min, then briefly centrifuge.
9. Add into the DNA sample DNA Assay Buffer, Binding Buffer 1, Biotinylated DNA capture oligo, Binding Buffer 2 in the order described.
10. Incubation the sample at 57°C (Optimal temperature should be tested depending on probe oligo length and sequences) for 2 hours.
11. Cool the sample to room temperature.

Magnetic Pull-Down:

12. Add MagVigen™-Streptavidin nanoparticles and incubate at room temperature on a roller for 1 hour.
13. After incubation, use the magnet to separate the DNA-captured nanoparticles from the solution.
14. Carefully remove the supernatant with a pipette, taking care not to disturb the DNA-captured nanoparticle pellet.
15. Wash the DNA-captured nanoparticle pellet by resuspending nanoparticles in warm Wash Buffer of 57°C.
16. Collect MagVigen™ -Streptavidin nanoparticles using magnet and remove the supernatant.
17. Wash the DNA-captured nanoparticle pellet by resuspending nanoparticles in Wash Buffer of room temperature.
18. Collect MagVigen™ -Streptavidin nanoparticles using magnet and remove the supernatant.

Elution:

19. Resuspend nanoparticles in 10 mM Tris Buffer with desired volume. Elute by incubating at 80°C for 5min.
20. Separate the nanoparticles from the eluted DNA with magnet.
21. Transfer the supernatant containing the DNA products to a clean tube. The purified DNA is ready to use for subsequent evaluation.

Example Reagents Use. Magnetic beads quantity can be titrated for best performance.

Reagent	ul	ul	ul
DNA Sample	200	400	1000
DNA Assay Buffer	98	195	390
Binding Buffer1	3.25	6.5	13
Binding Buffer 2	16.5	33	66
Magnetic Beads	20	20	40
Beads Re-disperse Buffer	20	20	40
Wash BufferX2	80	80	160