xCapSeq™ SA Beads

Components

Catlog：MB001　　Specification：1 mL / 5 mL / 100 mL

Component	MB001-002	MB001-005	MB001-100
xCapSeq™ SA Beads	1 mL	5 mL	100 mL

Notice ： xCapSeq™ SA Beads concentration is 10 mg/mL.

Storage and Delivery

2 ~ 8 ℃ delivery and storage (! Do not freeze).

Introduction

xCapSeq™ SA Beads are homogeneous, 2.8 μm diameter superparamagnetic beads that exhibit high binding capacity, excellent stability, low non-specific binding, high sensitivity, and fast reaction kinetics for biotinylated target molecules, resulting in improved throughput and sensitivity for genomics and proteomics applications. Based on these advantages, xCapSeq™ SA beads are ideally suited for target capture of DNA probe for Next Generation Sequencing (NGS) technologies and are more easily adapted to automated work systems.

Protocol

1. Pre-experimental Procedure

1.1 Reagent Prepared

Manufacturer #Catlog No.	Product/ Reagent Name	Component
*	2× Binding and Washing Buffer** (2×BW Buffer)	10 mM Tris-HCl, pH 7.4 1 mM EDTA2 M NaCl
*	Nuclease-Free Water	/

* Raw material reagents can be selected from regular laboratory supplier brands.

** The salt ion concentration and pH (typically 5 ~ 9) of 2× BW Buffer can vary depending on the type of molecule to be bound. Dilute 1× BW Buffer with an equal volume of Nuclease-Free Water before use (1:1 dilution). In some applications, surfactants, such as 0.01 - 0.1% Tween 20, can be added to minimize non-specific binding, and the user can choose the formulation according to the needs of the user.

1.2 Self-provided material

Manufacturer # Catlog No.	Name of instrument/ consumable	Description
WisGen#MR-B-08	xMag™ magnetic rack (1.5mL*8 holes)	Or any other similar product

2. Experimental Step

2.1 Beads Wash

xCapSeq™ SA Beads should be prepared 30 min prior to use to avoid prolonged room temperature standstill. It also needs to reach room temperature before use. Prepare 1× BW Buffer in advance, which can be prepared by referring to the table in step 1.1.

2.1.1 After removing xCapSeq™ SA Beads from the 4℃ refrigerator, leave for 30 min at room temperature.

2.1.2 Shake well for 15 sec using a vortexer to fully mix the magnetic beads settled at the bottom of the bottle.

2.1.3 Transfer the desired volume of magnetic beads into a 1.5 mL centrifuge tube.

2.1.4 The centrifuge tube was placed on a 1.5 mL magnetic rack for 1 ~ 2 min to completely separate the magnetic beads from the solution.

2.1.5 Carefully remove the supernatant and retain the magnetic beads.

2.1.6 Add 2 times the volume of the original magnetic bead solution in 1× BW Buffer and shake well for 15 sec.

2.1.7 Place the centrifuge tube on a magnetic rack for 1 ~ 2 min to completely separate the magnetic beads from the solution.

2.1.8 Carefully remove the supernatant and retain the magnetic beads.

2.1.9 Repeat steps 2.1.6 ~ 2.1.8 once again.

2.1.10 Add 2x volume of 1× BW Buffer of the original magnetic bead solution, shake well for 15 sec, and dispense into 0.2 mL PCR tubes according to the number of libraries.

2.1.11 Place the 0.2 mL PCR tube on a magnetic stand for 1 ~ 2 min to completely separate the magnetic beads from the solution.

2.1.12 Carefully remove the supernatant, retain the magnetic beads, and proceed immediately to the following steps.

Notice:The cleaned beads can be dispensed into 0.2 mL PCR tubes according to the number of samples and set aside.

2.2 Target Capture Application

This instruction manual is based on the principle of target capture technology. After hybridization of the probe and the target fragment, co-incubation with xCapSeq™ SA Beads, followed by washing and other steps, is performed to complete the subsequent experiments. If used in other application scenarios, the conditions should be changed accordingly.

2.2.1 Co-incubate the resulting hybridization product with the magnetic beads cleaned in step 2.1.12 (the magnetic beads have been transferred to a 0.2 mL PCR tube), and mix the solution well by pipetting the solution 10 times with repeated pipetting or by oscillating and mixing.

Notice:Do not create air bubbles.

2.2.2 The reaction was continued by placing the mixed suspension in a 65℃ PCR instrument (Lid set at 75℃).

Step	Temp (℃)	Time (min)
Step 1	65	45

2.2.3 After removing and shaking for 5 sec every 10 ~ 12 min, immediately put into the PCR instrument for reaction until the total reaction time is satisfied.

2.2.4 The cleaning step of the capture product can be followed up and the experiment can be completed by yourself according to the commercialized kit used by the customer.

Notice

xCapSeq™ SA Beads Binding Capacity

The volume of beads required for each experiment needs to be calculated based on the bead binding capacity (see Table 1).

Table 1. Typical binding capacity per milligram (100 μL) of magnetic beads

Target objectives	Binding capacity per mg (100 μL) of beads
Free Biotin (pmoL)	900 ~ 1200
ds DNA (μg)*	~ 30
ss oligonucleotides (pmoL)**	~ 500

* oligonucleotides and DNA fragment.

** Biotin-modified single-stranded oligonucleotides (~ 20 nt), with a corresponding input of 500 pmoL/mg of magnetic beads For oligonucleotides, the binding capacity is inversely proportional to molecular size (number of bases). The reduced binding capacity of long DNA fragments may be due to spatial site resistance.