

Anti-VEGFR2 DNA aptamer, Magnetic Cell Isolation Kit (Catalog No. VEGFR2-2041BCI/ VEGFR2-2041FBCI)

Description

Aptsci provides two types of kits. One is biotinylated aptamer based cell isolation kit (Catalog No. VEGFR2-2041BCI). The other is bi-labeled (FITC dye conjugated biotin aptamer) aptamer based cell isolation kit (Catalog No. VEGFR2-2041FBCI). Aptamer based magnetic cell isolation kit products do not adversely affect cells during isolation process, thus can be used to isolate pure, viable and functional cells which advance your biology research.

Aptsci VEGFR2 cell isolation kit is ideal for positive isolation of VEGFR2 expressing target cells directly from all types of samples. Cell can also be eluted from bead-cell complexes with releasing buffer included in Kit, and then be used in all downstream experiments, including flow cytometry, cell culture and molecular studies.

Component description

- Aptsci aptamer is a single stranded oligonucleotide that is engineered through advanced SELEX with modified nucleotide.
- Aptamer is generated with recombinant human VEGFR2 protein produced in mammalian cells and binds their cellular target with high affinity and specificity (Fig. 1).
- Magnetic beads are uniform, colloiddally stable and non-porous beads (1µm diameter) covalently coupled with streptavidin.
- Bi-labeled aptamer that has FITC at 5'-end to monitor protein expression by flow cytometry and biotin at 3'-end to separate target cells.

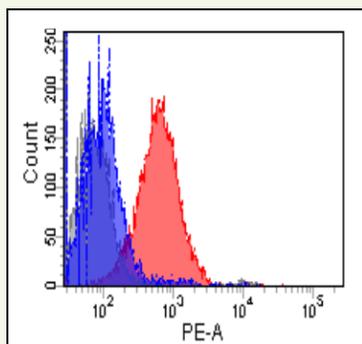


Fig. 1. Flow cytometry histograms showing the binding of representative VEGFR2 aptamer in HUVEC cells.

Approximately 1×10^6 cells were stained with biotin-conjugated VEGFR2 aptamer and streptavidin-PE (Red histogram). As a control, the cells were stained with biotin-conjugated control aptamer and streptavidin-PE (Blue histogram), and stained with streptavidin-PE without aptamer (Gray histogram).

Principle of the AptoPrep™ Cell Isolation

Aptsci cell isolation kit is designed to isolate cells via an indirect method and for positive selection principle using biotinylated aptamers and streptavidin magnetic beads.

Target cells are specifically labeled with biotinylated aptamer against cell surface target of desired cells. Streptavidin magnetic beads allow for efficient binding to the aptamer labeled cell. Magnetically labeled target cells are then separated from unlabeled cells using magnet. FACS analysis can immediately be performed with bi-labeled aptamer during cell isolation process (Catalog No. VEGFR2-2041FBCI). In final step, bead-free and aptamer-free target cells were released from bead-bound cells (positive fraction) using releasing component (Fig. 2).

Positive isolation: Discard the supernatants and use the bead-bound cells for downstream application.

Release target cells from beads: Bead-bound cells are washed and target cells are released from the beads with releasing buffer included in Kit.

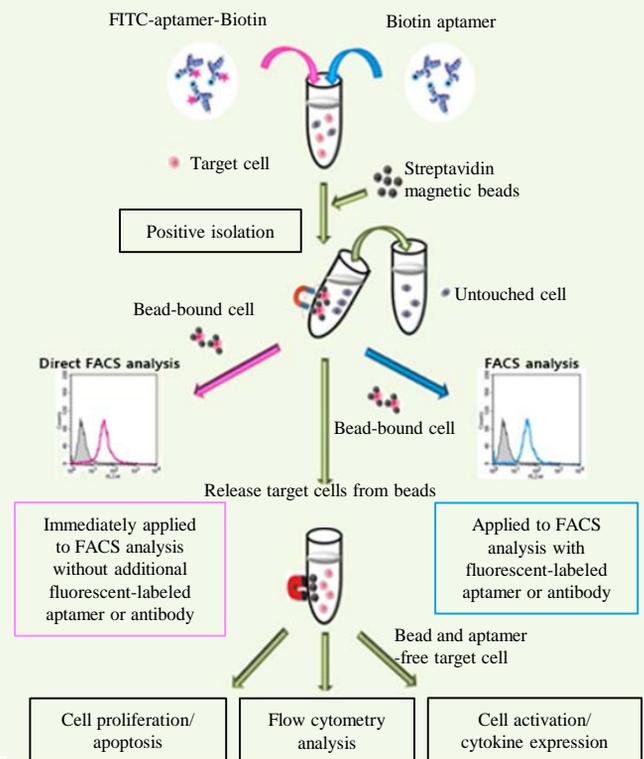


Fig. 2. Overview of AptoPrep cell isolation procedure.

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Typical results of the AptoPrep™ VEGFR2 Cell Isolation

Isolation of VEGFR2⁺ cells from VEGFR2⁻ cells was performed with Aptsce VEGFR2 cell isolation kit. Human umbilical vein endothelial cells (HUVEC, VEGFR2 positive cell, ~1x10⁶ cells) were spiked with lymphocytes (VEGFR2 negative cell, 1x10⁷ cells). Yield of VEGFR2⁺ cells isolation was measured at 50%. Purity and viability of recovered VEGFR2⁺ cells were measured at 99% and 83.7%, respectively (Fig. 3).

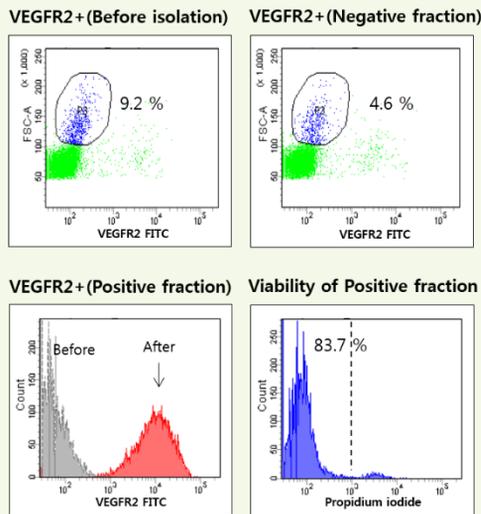


Fig. 3. Isolation of VEGFR2⁺ cells from VEGFR2⁻ with Aptsce VEGFR2 cell isolation kit. Both start sample before isolation and negative fraction after isolation were stained with biotinylated VEGFR2 aptamer and 2nd FITC-streptavidin (Blue dot plot in gate). Positive fraction is stained with biotinylated VEGFR2 aptamer and 2nd FITC-streptavidin (Red histogram) and propidium iodide for cell viability (Blue histogram). Cell isolation was performed with biotinylated aptamer (Catalog No. VEGFR2-2041BCI). As a control, the cells were stained with FITC conjugated control aptamer (Gray histogram).

Downstream application

VEGFR2⁺ cells can be efficiently isolated from a sample with Aptsce VEGFR2 cell isolation kit. Lyse the cells directly after isolation, and isolate proteins, DNA, or mRNA to be used in PCR, microarrays, proteomics, and other applications where the removal of beads is not required. For functional studies such as cytokine expression, proliferation/apoptosis induction or for flow cytometry analysis, the cells need to be released from beads after positive isolation of cell. Releasing buffer included in Kit will allow you to collect the bead-free and aptamer-free VEGFR2⁺ cell.

After elution of VEGFR2⁺ cells with releasing buffer, elution yield was calculated by counting cells with hemocytometer and measured at 30% (data not shown). Purity and viability of released VEGFR2⁺ cells were measured at 98.5% and 97.0%, respectively (Fig. 4).

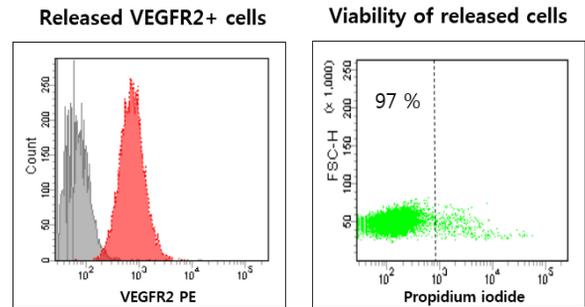


Fig. 4. Flow cytometry showing bead-free and aptamer-free VEGFR2⁺ cells. Released cell fraction (Red histogram) was stained with biotinylated VEGFR2 aptamer and streptavidin-PE and propidium iodide for cell viability (Green dot plot). Elution of target cell was performed with biotinylated aptamer (Catalog No. VEGFR2-2041BCI). As a control, the cells were stained with biotin-conjugated control aptamer and streptavidin-PE (Gray histogram).

Product Information

- **Product name:** Anti-VEGFR2 DNA aptamer, Magnetic Cell Isolation Kit
- **Catalog number:** VEGFR2-2041BCI (biotinylated aptamer based cell isolation kit), VEGFR2-2041FBCI (bi-labeled aptamer based cell isolation kit)
- **Content:** VEGFR2-2041BCI (Biotinylated aptamer, streptavidin-coated magnetic bead and buffer), VEGFR2-2041FBCI (FITC dye conjugated biotin aptamer, streptavidin-coated magnetic bead and buffer)
- **Form** Dried aptamer and bead in PBS pH 7.4 containing 0.01 % Tween-20, 0.09% NaN₃
- **Protein source for generation of aptamer:** Recombinant protein produced in mammalian cells.
- **Specificity:** Anti-VEGFR2 aptamer binds to human VEGFR2. Cross reactivity with other species has not been tested.
- **MW:** ~27 kDa
- **Tested applications:** FACS and cell isolation
- **Shipping & Storage :** At 2°C to 8°C. There is no decrease in performance of the kit after storage for 1 year at 2°C to 8°C.

LIMITATIONS

Warranty: Aptsce AptoPrep™ products are warranted to meet stated product specifications and to confirm to label descriptions when used and stored properly. Unless otherwise stated, this warranty is limited to one year from date of sales for products used, handled and stored according to Aptsce's instructions. Aptsce's sole liability is limited to replacement of the product or refund of the purchase price. AptoPrep™ products are supplied for research use only. They are not intended for medicinal, diagnostic or therapeutic use. AptoPrep™ may not be resold, modified for resale or used to manufacture commercial products without prior written approval from Aptsce.