System Biosciences

FUELING YOUR INNOVATION

# SMARTSEC™-TC

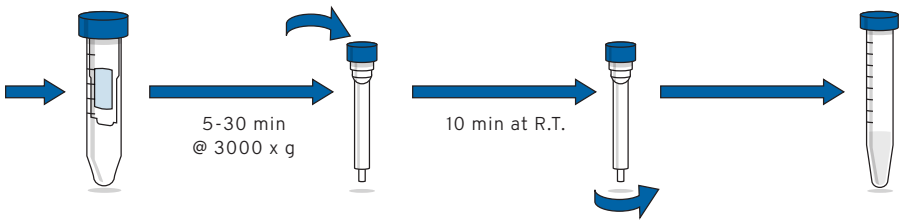
## SINGLE-FRACTION ELUTION EV ISOLATION KIT FOR TISSUE CULTURE MEDIA

SmartSEC-TC is our latest innovation in extracellular vesicle (EV) isolation optimized for large volumes of tissue culture media. With 6x higher yield and 3x higher purity than silicon carbide-based methods, this new kit provides more precise, accurate, and reproducible results. SmartSEC-TC is also 2-3x faster than conventional SEC, significantly accelerating your workflow. Its single-fraction elution and minimal hands-on time streamline the isolation process, making it perfect for a wide range of downstream applications, including Western blot, NTA, TEM, RNA-Seq, proteomics, and lipidomics profiling.

## KIT CONTENTS (CAT#: SSEC-TC-200A-1)

| COMPONENT | QTY/VOLUME | STORAGE TEMPERATURE |
|---|---|---|
| Media Concentrator | 8 concentrators | +4°C - +30°C |
| SmartSEC-TC column | 8 columns | |
| Column buffer | 50 mL | |
| Column closures | 8 | |
| Media Concentrator Max. Capacity | 15mL | |
| Concentrated Media Range | 300-600 µL | |

## SIMPLE WORKFLOW




**1.** Load 10 mL cell culture media free of cell debris to the media concentrator and centrifuge to reduce the media volume to 500 µL

**2.** Incubate concentrated media with SSEC-TC column for 10 min at room temperature

**3.** Centrifuge for 1 min at 500 x g

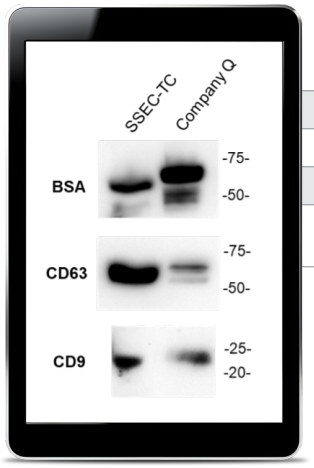
**4.** Purified EVs (500µL) are in the flow-through

**Hands-on time: <10 minutes; total run time: <59 minutes for serum-free media and up to 90 min. for regular culture media**

# SMARTSEC™-TC KIT SINGLE-FRACTION ELUTION EV ISOLATION KIT FOR TISSUE CULTURE MEDIA

## SUPPORTING DATA

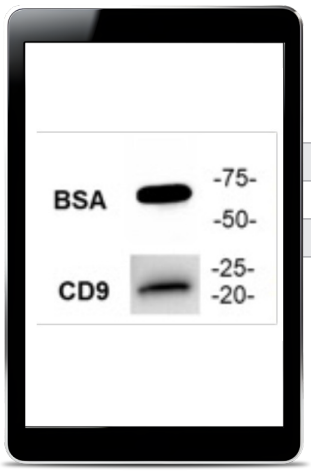
### FIG. 1: SMARTSEC-TC ACHIEVES SUPERIOR EV PURITY COMPARED TO CONVENTIONAL SEC




| | HEK293 CELL CULTURE MEDIA | |
|---|---|---|
| Isolation Method | SmartSEC-TC | Company Q |
| Concentration (µg/µL) | 1.63 | 0.48 |
| Volume (µL) | 550 | 1,000 |
| Total Yield (µg) | 896.5 | 480 |
| Particle Concentration (Particles/mL) | $1.53 \times 10^{10}$ | $1.65 \times 10^{10}$ |

Single-fraction Elution SmartSEC-TC delivers higher yields of cleaner EVs compared to multiple pooled fractions obtained from conventional SEC (Company Q). To compare SmartSEC-TC with a competitor's SEC-based columns, EVs were isolated from 10 mL of HEK293 cell culture media containing 10% Exo-FBS exosome-depleted fetal bovine serum (FBS) (Cat: Exo-FBS50A-1) using both methods. Western blot and fluorescent nanoparticle tracking analysis (fNTA) showed that SmartSEC-TC produced EVs with comparable particle concentrations but significantly higher EV marker proteins (CD63, CD9) and lower carryover proteins like BSA.

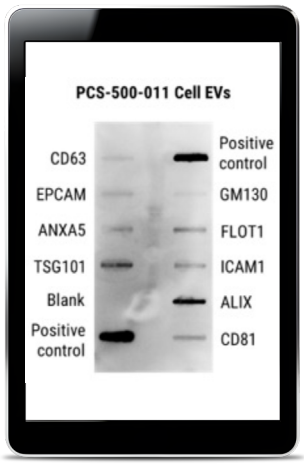
### FIG. 2: SMARTSEC-TC ENSURES HIGH-PURITY EV ISOLATION IN LOW-SERUM STEM CELL CULTURE



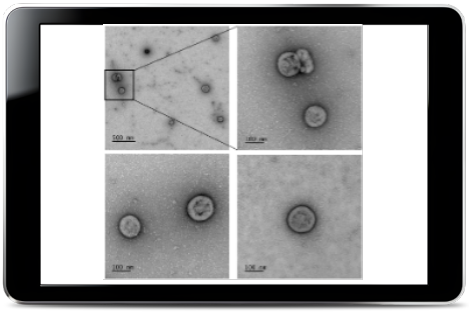

| | PCS-500-011 CELL CULTURE MEDIA |
|---|---|
| Isolation Method | SmartSEC-TC |
| Staring Volume (mL) | 14 |
| Protein Yield/ml (µg/mL) | 7.86 |
| Particles/mL | $3.30 \times 10^{10}$ |

EVs isolated from PCS-500-011 adipose-derived mesenchymal stem cell culture media by SmartSEC-TC. EVs isolated from PCS-500-011 human adipose-derived mesenchymal stem cell culture media (containing 0.2% FBS) using SmartSEC-TC exhibited typical EV protein markers on Western blot (Fig. 2) and demonstrated excellent EV particle yield as analyzed by fNTA. In addition, all the positive EV protein markers were validated using SBI's Exo-Check™ Exosome Antibody Array assay (Cat: EXORAY200B-4) (Fig. 3).

### FIG. 3:




### FIG. 4: SMARTSEC-TC DELIVERS MORPHOLOGICAL INTEGRITY OF ISOLATED EVS



SmartSEC-TC Isolated EVs Maintain Structural Authenticity. EVs isolated from HEK293 cell culture media using SmartSEC-TC exhibit typical EV morphology—intact vesicles with lipid bilayer membranes – and minimal visible background debris, as demonstrated by transmission electron microscopy (TEM).

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