LabSpinner
ExoDiscovery

Dunn Labortechnik

ExoDiscovery® / ExoDisc® System

and ExoPrism® Reagent Kits

Rapid Isolation of **Intact Extracellular Vesicles (EVs)**

Product Information

ExoDiscovery® & ExoDisc®

TFF (Tangential Flow Filtration)
on non-sticky nano-filter

ExoDiscovery® / ExoDisc®

Semi-automated System

- *Easy-to-Use* benchtop device and cartridges (discs)
- *Rapid and label-free* isolation of *intact Exosomes / EVs*
- *High yield* and *high purity* nano-filtration technology
- Applicable for *cell culture supernatant (CCS), plasma, serum, CSF etc.*

ExoPrism®

- *Reagent kits for enrichment and purification of Exosomes / EVs*
- *Rapid and scalable isolation of intact Exosomes / EVs*
- *High yield* and *high purity by selective precipitation*
- Two kits available for
  1. *CCS and Urine* and
  2. *Plasma and Serum*

ExoPRISM®

EV-enriched coagulation
by colloid chemistry

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ExoDiscovery® / ExoDisc®

Semi-Automated Exosome / EV Isolation System

The ExoDiscovery® rotor device is an easy-to-handle tabletop centrifuge **for rapid isolation of nanoscale extracellular vesicles (EVs).** Using a disposable ExoDisc® -D20 or -D100 cartridge and a pre-defined, optimized isolation protocol the user can easily isolate EVs **>20 nm** or **>100 nm** from a variety of biological sample such as plasma, serum, urine, cerebrospinal fluid (CSF), etc. in as short as 15 - 60 minutes.

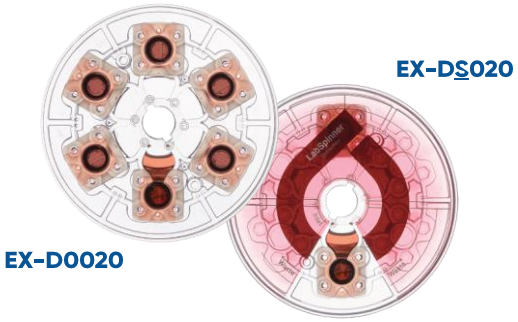
Because of the gentle isolation conditions (low centrifugal force: < 500 xg) and patented filtration technology used, ExoDiscovery® provides *high yields <u>of high purity intact EVs</u>* for sensitive downstream analyses (e.g. NTA, SEM, TEM, western blotting, ELISA, DNA/RNA prep for qPCR, or sequencing) and is ideal for precision science and research applications.

Cat.-No. EX-R1001

ExoDiscovery®
semi-automated rotor device

<u>Key Features:</u>

- Easy setup via touch screen display
- Embedded user protocols for semi-automated operation with ExoDiscs®
  (No pre-treatment or labelling of samples required.)
- Rapid (15-60 min total time) and gentle (< 500 xg) isolation of intact EVs with high purity and high yield)
- Compact design:
  W X D X H: 25 cm x 40 cm x 15 cm
- Weight: 6 kg
- Power: 30 W (100-240 V, 50-60 Hz)

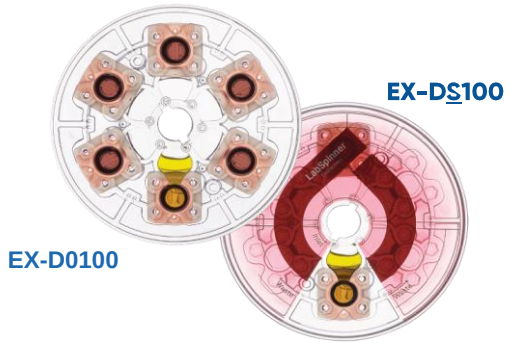


Cat.-No. EX-D0020 & EX-D<u>S</u>020

ExoDisc® - D20
for CCS/Urine/CSF/Bronchial Wash

- **EX-D0020**:
  - 6 identical filters (up to 6 samples at once)
  - 1 ml/load/filter
- **EX-D<u>S</u>020** (Sterilized) [upon request]
  - 1 filter for single-use
  - 1 ml/load

* Each single filter can be loaded multiple times depending on the particle concentration of the sample (n > 4 in general)



Cat.-No. EX- D0100 & EX-D<u>S</u>100

ExoDisc® - D100
for Plasma/Serum/Other

- **EX-D0100**:
  - 6 identical filters (up to 6 samples at once)
  - Protein-crowned EVs in plasma/serum
    : 0,1 ml/load/filter
  - Normal large EVs (>100 nm) : 0,1 ml/load/filter
- **EX-D<u>S</u>100** (Sterilized) [upon request]
  - 1 unit for single use

ExoPrism®

EV Reagent Kits for Biological Samples

The two types of ExoPrism® (**Exo**some **PR**ecipitation by **I**onic **S**trength **M**odulation) Kits offer sample specific **quick, scalable and customizable protocols** for *high yield and high purity* EV isolation.

Using a *selective precipitation protocol*, in combination with standard *100 kDa MWCO centrifuge filter tubes* (e.g. Amicon®, Vivaspin® or Pierce™)* and a laboratory centrifuge preparations of most EVs are obtained from CCS, Urine, CSF, BW or Plasma/Serum while biological functions of isolated EVS are preserved. The used non-PEG reagent can be easily removed by washing.

* Consumables like standard 15 or 50 ml sampling tubes and centrifuge filter tubes (MWCO 100 kDa) are not included in the reagent kits.

ExoPrism® Kits

Key Features:

- Rapid (30-90 min total time)
- High yield (> 85% recovery)
- High functionality with only two reagents
- Scalable sample volumes
- Two kits optimized for EV isolation from different biological samples
  (see description below for more details)

Cat.-No. EP-CU020

ExoPrism® EV Reagent Kit

for *CCS* and *Urine*

EP-CU020:

- Scalable sample volume (1 ~ 100 ml/kit)
- **Reagent B** (Precipitation solution)
  Sample : Reagent B = 1:1
- **Reagent C** (Rinsing solution)

Cat.-No. EP-PS020

ExoPrism® EV Reagent Kit

for *Plasma* and *Serum*

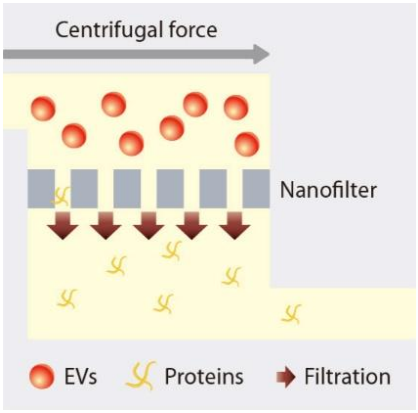
EP-PS020:

- Scalable sample volume (0.1 ~ 20 ml/kit)
- **Reagent P** (Precipitation solution)
  Sample : Reagent B = 1:0.8 (nucleic acid analysis) or 1 : 0.3 (protein analysis)
- **Reagent Q** (Rinsing solution)

ExoDiscovery®/ ExoDisc® Technology

Rapid, Gentle and Lable-Free Isolation of Extracellular Vesicles (EVs)

Outstanding performance to obtain intact EVs from various biological samples:
Cell culture supernatant (CCS), Urine, Plasma/Serum Bronchial Wash (BW), etc.



Tangential Flow Filtration (TFF) through a nanofilter by FAST* allows gentle but efficient separation under greatly reduced pressure (<500 xg) compared to other isolation methods.

*FAST: Fluid-Assisted Separation Technology (patented)

► ExoDiscovery® / ExoDisc® Features

- Rapid operation
- Small formfactor
- Simple steps

- Label-free, intact EVs
- High yield
- High purity
- Gentle (< 500 xg)

- Small sample volumes
- No pretreatment step
- 6 samples per disc

► User-friendly Operation: 3 Simple Steps

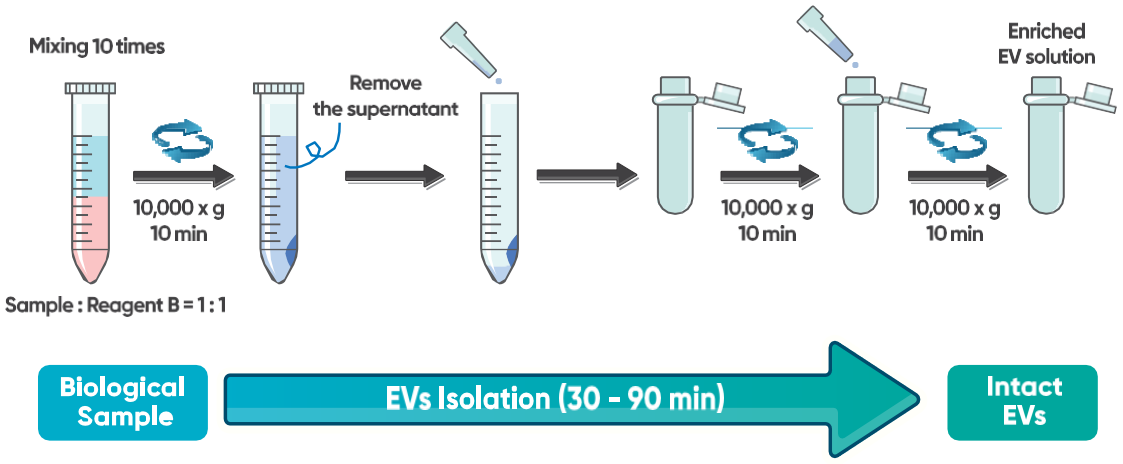
Time: ~15 – 40 min

► Advantages compared to other common methods

Methods	ExoDiscovery™	Ultracentrifugation	Precipitation	Immunocapture
Recovery	●●●	●	●	●
Purity	●●	●	●	●●●
Intact EVs	Y	Y	Y	N
Time	10 ~ 40 min	3 ~ 9 h	2 ~ 12 h	4 ~ 20 h
Max. G-force	500	150,000	1,500 ~ 10,000	-

ExoPrism® Principle

EV Isolation Kits for Biological samples

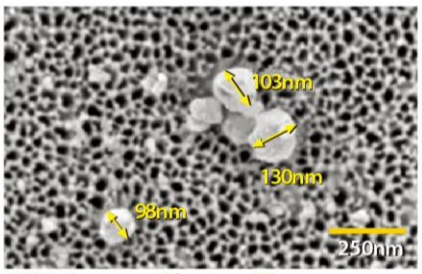


Isolation of intact EVs by precipitation/washing using LabSpinner ExoPrism® Kits (Example: ExoPrism® Kit for Cell Culture Supernatant and Urine Samples)

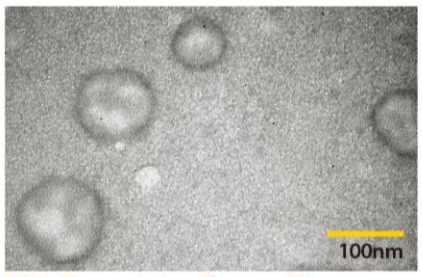
Exosome **PR**ecipitation by **I**onic **S**trength **M**odulation, (**ExoPRISM**) is a quick, scalable, and customizable EV isolation method for high yield and high purity preparation of intact exosomes / EVs.

Selective precipitation leads to concentration of most EVs while preserving their biological functions. The employed (Non-PEG) reagent is removed by subsequent washing steps employing standard 100 kDa MWCO centrifuge filter tubes. Depending on the type of sample, EV concentration and the used ExoPrism® Kit, EV preparations are typically obtained in only 1 to 1.5 hours.

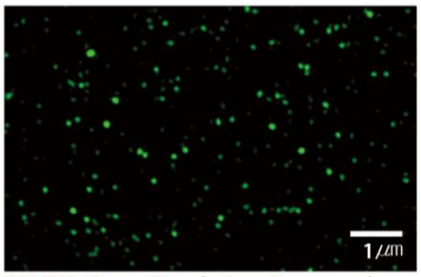
► Purified Intact Extracellular Vesicles (Microscopic Analyses, Examples)



SEM_Scanning Electron Microscopy

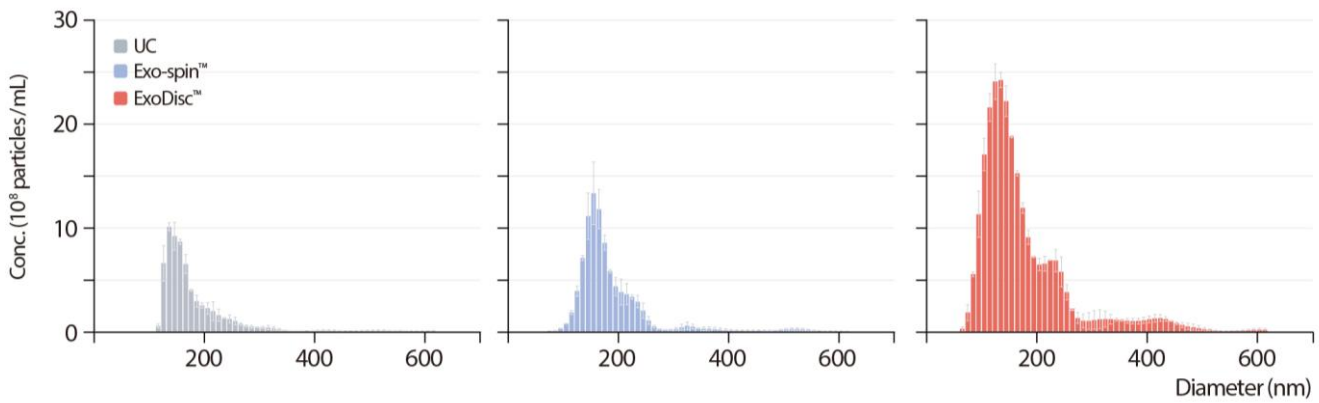


TEM_Transmission Electron Microscopy



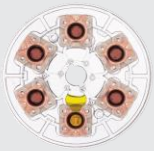
SR-SIM_Super Resolution-Structured Illumination Microscopy

► High Yield (Example: ExoDisc® compared with other isolation methods)



User Application Guide

Sample Type, EV size and product specific recommendations

Product	**ExoDisc -D20**	**ExoDisc -D20S**	**ExoDisc -D100**	**ExoDisc -D100S**	**ExoPRISM for CCS/Urine**	**ExoPRISM for Plasma/Serum**
						
	Unsterilized	**Sterilized**	**Unsterilized**	**Sterilized**	**Unsterilized**	
EV size	**> 20 nm**		**> 100 nm**		**Size independent**	
Sample Type	**CCS, Urine**		**Plasma, Serum**	**Others**	**CCS, Urine**	**Plasma, Serum**
Sample Volume	**≤ 30 mL per Disc**	**≤ 5 mL per Disc**	**≤ 1.2 mL per Disc**	**≤ 5 mL per Disc**	**≤ 100 mL per Kit**	**≤ 20 mL per Kit**
Time*1	**30 min**		**1 hr**		**1 hr**	**1.5 hr**
Platform	**ExoDiscovery** 				**Centrifuge** 	

*1 The operation time depends on the EV concentration in the sample.

Literature / References

Selection from Peer-reviewed Journals

ExoDisc®

1. Exodisc for Rapid, Size-Selective, and Efficient Isolation and Analysis of Nanoscale Extracellular Vesicles from Biological Samples, **ACS Nano** 2017 Feb 28:11(2):1360-1370, DOI: 10.1021/acsnano.6b06131

2. FAST: Size-selective, Clog-free Isolation of Rare Cancer Cell from Whole Blood at Liquid-Liquid Interface, **Analytical Chemistry** 2017 92(8):6010-6018, DOI: 10.1021/acs.analchem.6b03534

3. Urine-based Liquid Biopsy: Non-invasive and Sensitive AR-V7 Detection in Urinary EVs from Patients with Prostate Cancer, **Lab Chip** 2018 Dec 18;19(1):87-97, DOI: 10.3389/fonc.2022.759791

4. Fully automated, lable-free isolation of extracellular vesicles from whole blood for cancer diagnosis and monitoring, **Theranostics** 2019 Mar 7:9(7)1851-1863, DOI: 10.7150/thno.32438

5. Detection of EGFR Mutations Using Bronchial Washing-Derived Extracellular Vesicles in Patients with Non-Small-Cell Lung Carcinoma, **Cancers** 2020 Sep 30;12(10):2822 DOI: 10.3390/cancers12102822

6. Comprehensive evaluation of methods for small extracellular vesicles separation from human plasma, urine and cell culture medium, **Journal of Extracellular Vesicles** 2020 Dec;10(2):e12044 DOI: 10.1002/jev2.12044

ExoPrism®

1. EV-Ident: Identifying Tumor-Specific Extracellular Vesicles by Size Fractionation and Single-Vesicle Analysis, **Analytical Chemistry** 2020 Apr 21;92(8):6010-6018 DOI: 10.1021/acs.analchem.0c00285

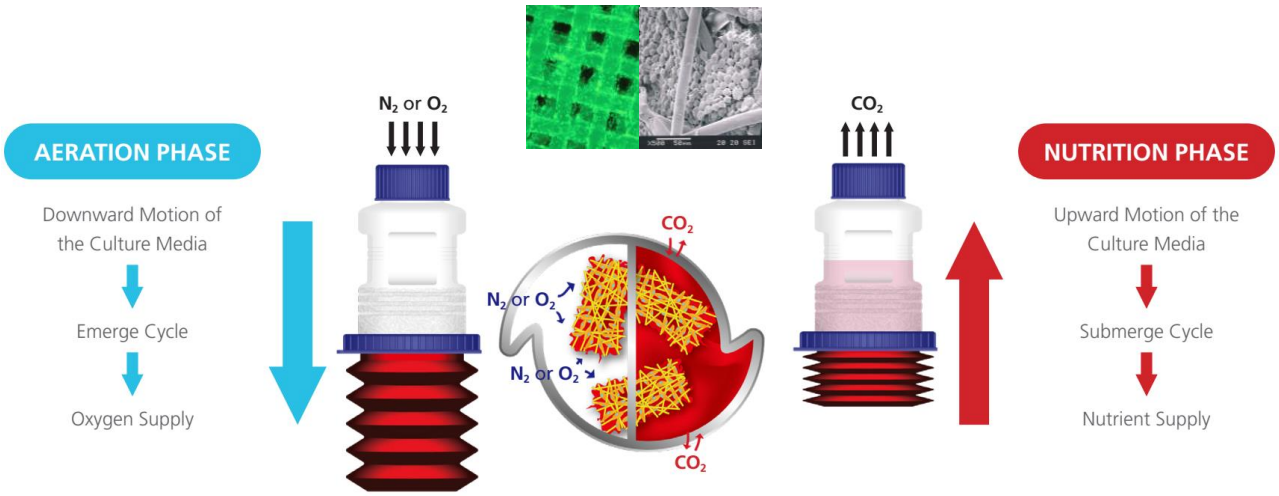
2. Exosome Precipitation by Ionic Strength Modulation: ExoPRISM, **Applied Materials & Interfaces** 2023 Nov 28;15(49);56807-56819, DOI: 10.1021/acsami.3c13527

Also available from Dunn Labortechnik:

Scalable **BelloCell® Adherent Cell - Tide Motion Bioreactor Systems** from Esco Bioengineering for a broad range of *Adherent Cell Culture Applications* and for the **Production of Exosomes / EVs**.

BelloCell® „Batch“ Culture System

BelloCell® Continuos Culture System



Tide motion principle: Low sheer-stress and at the same time optimal supply of nutrients and oxygen by alternating exposure of adherent growing cells to cell culture medium and oxygen (gas atmosphere).

Please contact us for more information or an individual offer!

Also on offer from Dunn Labortechnik:

A wide selection of Cell Culture Incubators

from N-Biotek and ShelLab/Sheldon Manufacturing.