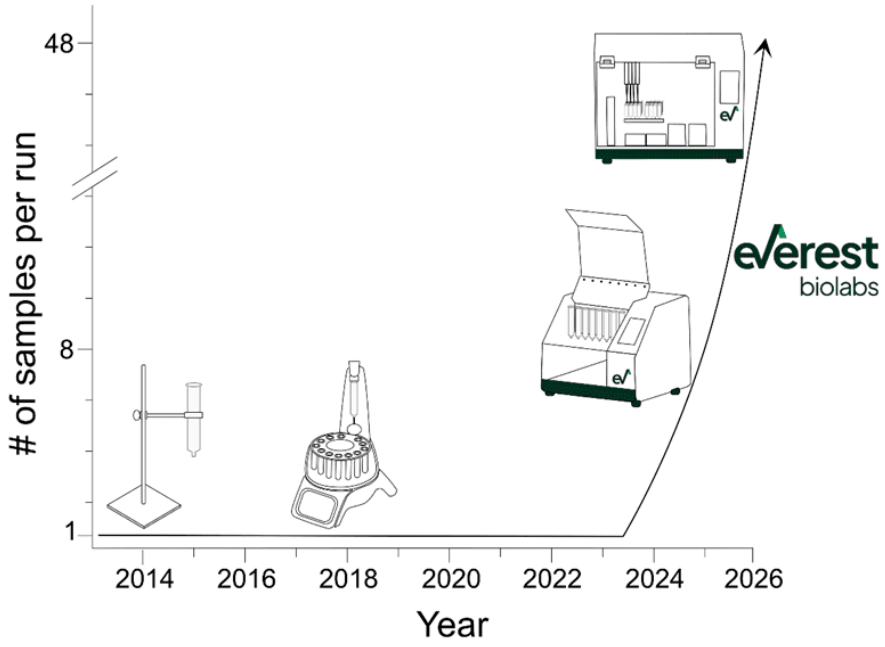
ASCENT · SUMMIT · AUTOMATION

Automation for the lab people: revolutionizing EV isolation with SEC automation

Ascent™ and Summit™ instruments are for research use only. Not for use in diagnostic procedures.



Growth of SEC-based EV isolation, driven by innovation at Everest Biolabs.

Over the past two decades, extracellular vesicles (EVs) have transitioned from being considered cellular debris to center stage as powerful mediators of intercellular communication. These nanoscale particles are now critical to new tools in therapeutics and diagnostics, engineered as viral-free delivery systems for genes and drugs, or analyzed in biofluids for early detection of conditions like cancer or Alzheimer's disease.

In diagnostics, the promise of liquid biopsy is already materializing, with EV-based assays reaching the market and earning FDA Breakthrough Device Designations. To unlock the full diagnostic potential of EVs, researchers must scale up biomarker discovery, such as proteomics and RNA sequencing, across large patient cohorts. Doing so requires robust, reproducible, high-throughput EV isolation, which drives Everest Biolabs' mission to remove these bottlenecks.

THE CHALLENGE OF MANUAL SEC ISOLATION

Size-exclusion chromatography (SEC) is the method of choice for EV isolation, offering an optimal balance of yield and purity per the MISEV2023 guidelines. However, standard gravity-fed SEC columns are labor-intensive and low-throughput. A typical isolation workflow takes over an hour of hands-on time and involves:

1. Column pre-equilibration
2. Manual sample loading
3. Buffer addition
4. Fraction collection

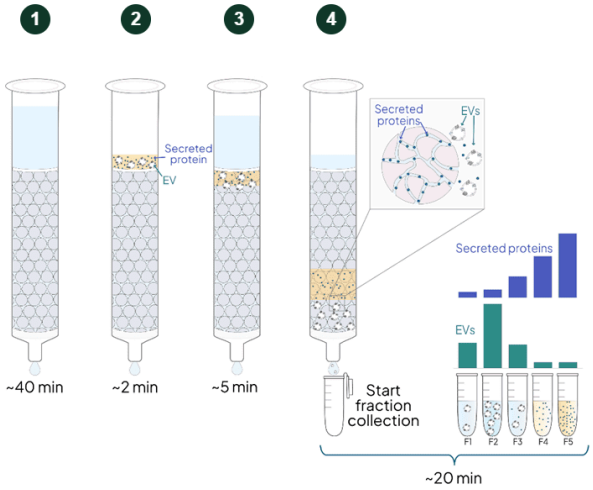


Figure 1. Manual SEC workflow. EV isolation with gravity-fed SEC columns requires over an hour of hands-on time per run.

INTRODUCING AUTOMATION: THE ASCENT

In November 2024, Everest Biolabs launched the Ascent instrument, a first-of-its-kind device for true parallel, hands-free SEC-based EV isolation. Capable of running 8 samples simultaneously, the Ascent eliminates manual intervention after sample loading, freeing researchers to focus on analysis rather than routine tasks. More than a fixed system, it is an open platform, compatible with Everest's Apex columns as well as third-party and home-packed columns, with programmable buffer dispensing and up to 12 precise fractions per column.

PRODUCTIVITY AT SCALE

Compared to single-column setups, the Ascent offers dramatic time savings: what would take two weeks manually can now be done in three days. Just as importantly, the platform ensures exceptional reproducibility, a low CV in fraction volumes, eliminating the inconsistencies that plague manual SEC workflows and protecting the integrity of precious samples.

Figure 2. The Ascent instrument. Parallel, hands-free SEC-based EV isolation for up to 8 samples at a time.

THROUGHPUT COMPARISON

Metric	Manual	AFC (Izon)	Ascent	Summit
Samples per run	User-dependent	1	8	48
Hands-on time / run	70 min	5 min (monitored)	5 min	10 min
Fully automatic wash	No	No	**Yes**	**Yes**
Column Saver*	No	No	**Yes**	**Yes**
Time for 96 samples	One week	One week	3 days	< 1 day
Automatic concentration	No	No	No	**Yes**
Open platform	—	Izon only	Multiple vendors	Everest only

Table 1. *Throughput and sample-quality improvements with Everest Biolabs' automated solutions. *Column Saver prevents columns from drying out, allowing unattended use.*

FROM DISCOVERY TO CLINICAL VALIDATION: THE SUMMIT

Anticipating the demands of large-scale clinical studies, Everest developed the Summit instrument, a fully autonomous high-throughput platform that isolates EVs from up to 48 samples in parallel. Launched at ISEV2025 in Vienna, the Summit uses a SEC plate format with the same gel volume as Apex columns and performs the entire workflow, from column preparation to EV recovery — in a 24–well format without user intervention:

- Automated gel equilibration
- Collection in concentration plates
- Sample loading and run
- Transfer to assay-ready wells

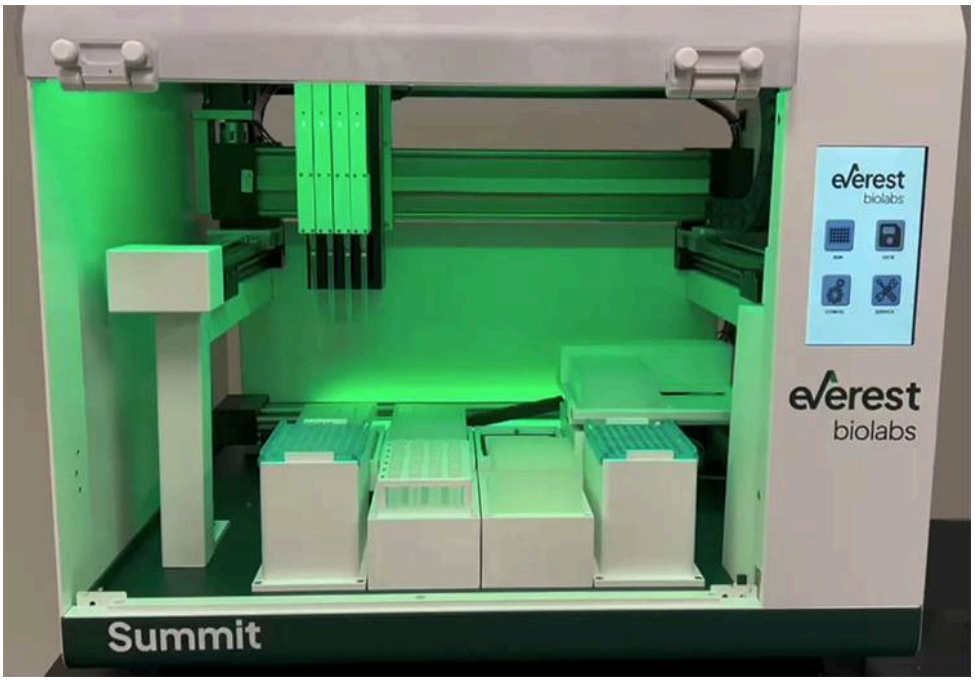


Figure 3. The Summit instrument. Fully automated, high-throughput EV isolation for up to 48 samples in a 24-well format, ideal for studies of 1,000+ clinical samples.

Finding the right SEC for your application

EV isolation by SEC often involves trade-offs between yield and purity, making it essential to select the right column for your sample type and downstream application. Everest Biolabs' Column Selector helps you quickly identify the most suitable Apex column for your needs.

Try the Column Selector →

CONCLUSION

As EV-based diagnostics move closer to clinical reality, automation is no longer a luxury; it's a necessity. Everest Biolabs' Ascent and Summit platforms provide scalable, reproducible, efficient solutions to meet the growing demands of EV research. Whether you're processing one sample or a thousand, Everest empowers you to move faster, reduce variability, and focus on what truly matters: unlocking the power of extracellular vesicles.