ASX ANNOUNCEMENT

Exopharm to Present at Key Exosome Industry Event

16 November 2021, Melbourne, Australia:

Exopharm Limited (ASX:EX1), a clinical-stage, global leader in exosome medicines, announces that Chief Commercial Officer and Deputy CEO, Dr Chris Baldwin, will present at the *3rd Exosome Based Therapeutic Development Digital Summit* on 16 November (2:00PM US Eastern Time, 6:00AM AEDT).

The presentation entitled *"Recent Advances in Cation Exchange Purification of Exosomes"* will highlight recent developments that Exopharm has made with its LEAP technology for the purification of exosomes.

The Summit, subtitled "*Successfully Source, Characterize & Load Clinically Relevant Exosome Therapeutics for Accelerated Development & Commercialization*", is the key international industry-dedicated exosome meeting.

A copy of Dr Baldwin's presentation slides is attached.

By the Managing Director - this announcement has been authorised for release by the Managing Director.

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ABOUT EXOPHARM

Exopharm Limited (ASX:EX1) is a clinical-stage biopharmaceutical company at the forefront of transformative medicines using exosomes, or extracellular vesicles (EVs), and is pursuing a pipeline-driven platform strategy.

Exosomes can be loaded with a variety of active pharmaceutical ingredients (APIs) and can be targeted to selected cell and tissue types (tropism) – improving the safety -profile of the APIs and providing better treatments.

Exosome delivery of DNA and other gene therapies into the nucleus of the patient's cells can improve treatment of inherited medical conditions.

Exosomes are an alternative means of drug delivery inside the body, alongside technologies such as lipid nanoparticles (LNP), cell-penetrating peptides, viral vectors and liposomes. The drug delivery industry is growing at a compound annual growth rate (CAGR) of 5% and is currently valued at about US$175 billion ($233 billion).

Exopharm's exosome technologies meet important needs for the success of exosome medicines – **LEAP** manufacturing technology, **LOAD** API loading and **EVPS** tropism.

Exopharm's suite of exosome technologies enables its own pipeline of exosome medicines – each aimed at delivering a transformative medicine for an unmet medical need.

Exopharm's intellectual property is also available under licences or partnerships to empower others to build their pipelines around the benefits of exosome medicines.

FORWARD LOOKING STATEMENTS

This announcement contains forward-looking statements which incorporate an element of uncertainty or risk, such as 'intends', 'may', 'could', 'believes', 'estimates', 'targets', 'aims', 'plans' or 'expects'. These statements are based on an evaluation of current corporate estimates, economic and operating conditions, as well as assumptions regarding future events. These events are, as at the date of this announcement, expected to take place, but there cannot be any guarantee that such events will occur as anticipated or at all given that many of the events are outside of Exopharm's control or subject to the success of the Development Program. Furthermore, the Company is subject to several risks as disclosed in the Prospectus dated 6 November 2018.

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Recent Advances in Cation Exchange Purification of Exosomes

November 2021

Exosome Based Therapeutic Development

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Agenda

1. Introduction to Exopharm and LEAP
2. Recent Developments
3. Summary

Exopharm

- Australian development-stage biotechnology company dedicated to bringing exosome medicines to patients
- 50 staff based in Melbourne

LEAP	**Commercial-scale exosome purification capabilities**
EVPS	**Engineered exosomes for selective tissue targeting (*tissue tropism*)**
LOAD	**API cargo loading for exo-drug delivery**

Modular Platforms Enabling Exo-Medicines Across Broad Disease Categories *

Engineered Exosomes

EVPS **Exo-Tropism – targeted delivery**

- Externally presented targeting molecules
- Can be selected for selected cell / tissue type
- Can aid crossing the blood-brain barrier
- Non-viral, human molecules

LOAD **Exo-Cargo Loading**

- AAV
- DNA
- CRISPR
- Small molecules
- Nucleases
- RNA

LEAP

Exosome purification technology

Proprietary technology to purify exosomes in large-scale and as clinical-grade product

Exo-Medicines

Precision-engineered medicines for select tissue targeting and optimized cargo delivery

- Rare Diseases
- Cancers
- Viruses
- Neurological Diseases
- Ocular Disorders

Naïve Exosomes

LEAP **Commercial-scale naïve exosome purification from adult stem cells, blood products etc**

- Harness the regenerative power of adult stem cells or donor blood material
- Cell-free product
- Improved logistics and supply-chain compatibility
- Proven safety
- Low immunogenicity
- Cross tissue barriers (e.g. blood-brain barrier)
- High biocompatibility

* Illustrative

Starting with the End in Mind

Same Objective:

Exosome medicines will be a major modality for delivering precision medicines

Different Approaches

Product First Approach (others)

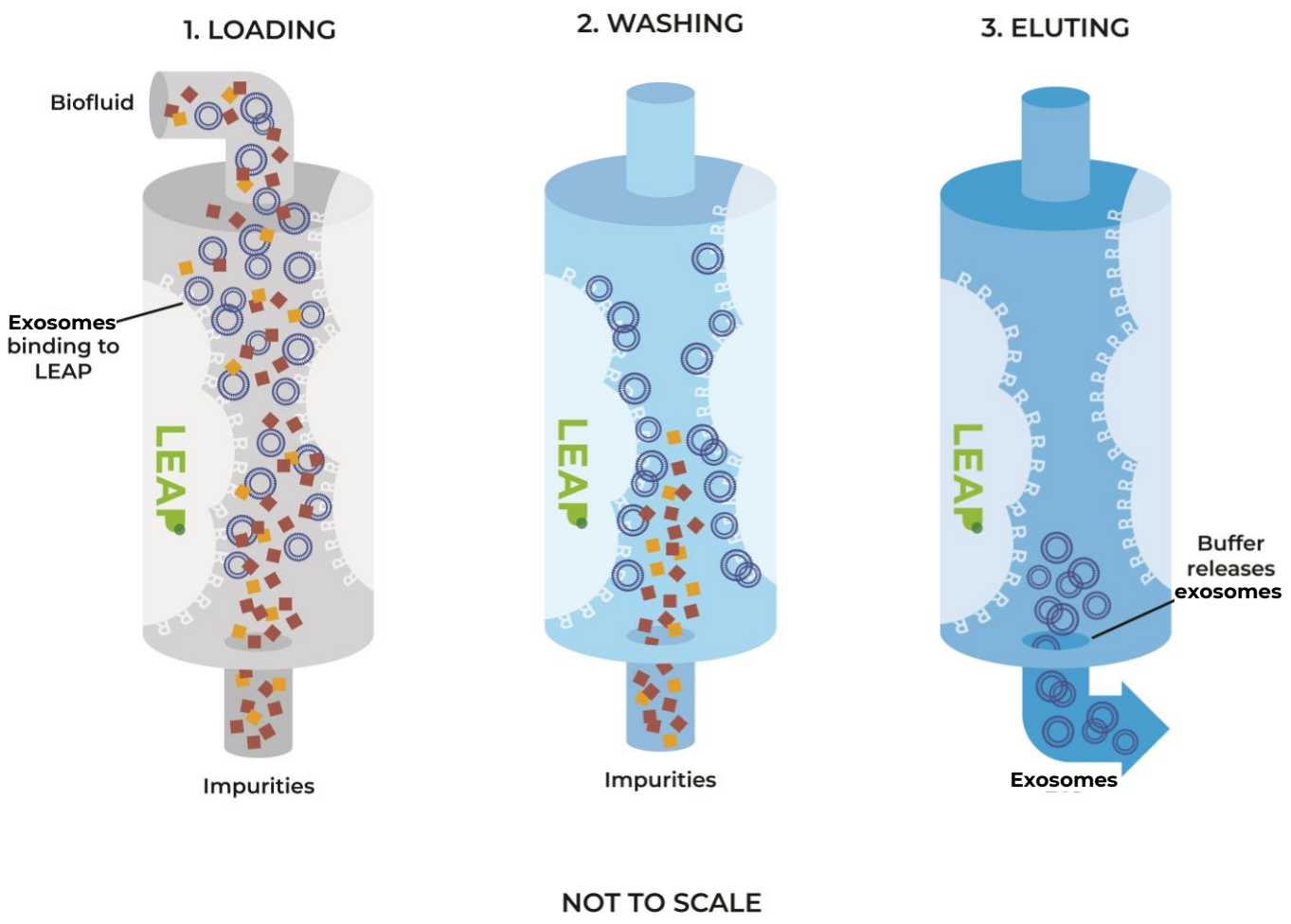
- Identify the indication
- Demonstrate efficacy
- *Solve scalability later*

Process First Approach (Exopharm)

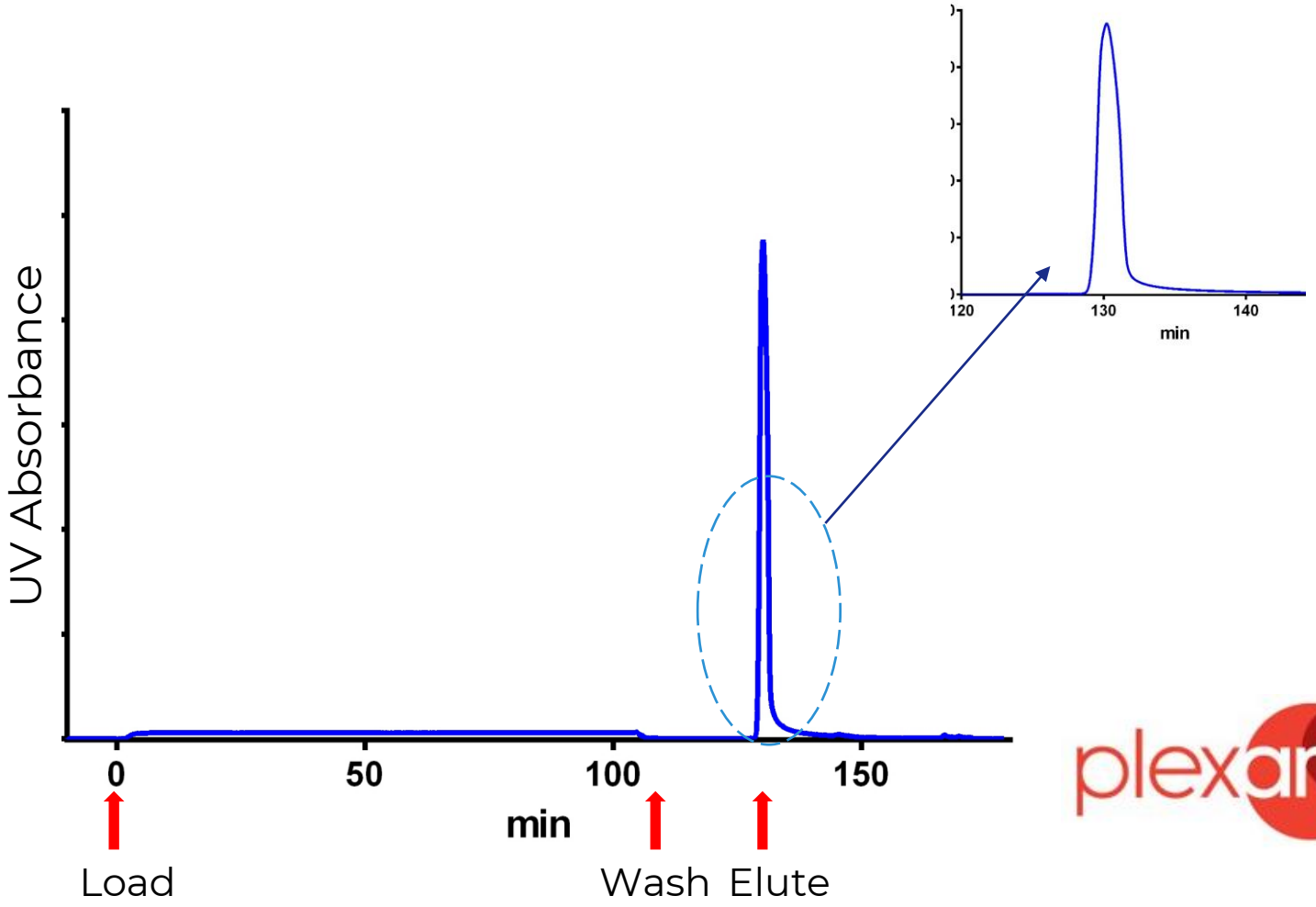
- Invent manufacturing process that is:
  - General
  - Scalable
  - Economical
- Solve scalability upfront
- **LEAP™**

LEAP Chromatography

1. Biofluid is loaded onto LEAP chromatography column
   - Exosomes bind to the LEAP matrix
   - Impurities stay in the flow through
2. Residual impurities washed out
   - Exosomes retained
3. Exosomes recovered with elution buffer
4. Column cleaned & regenerated



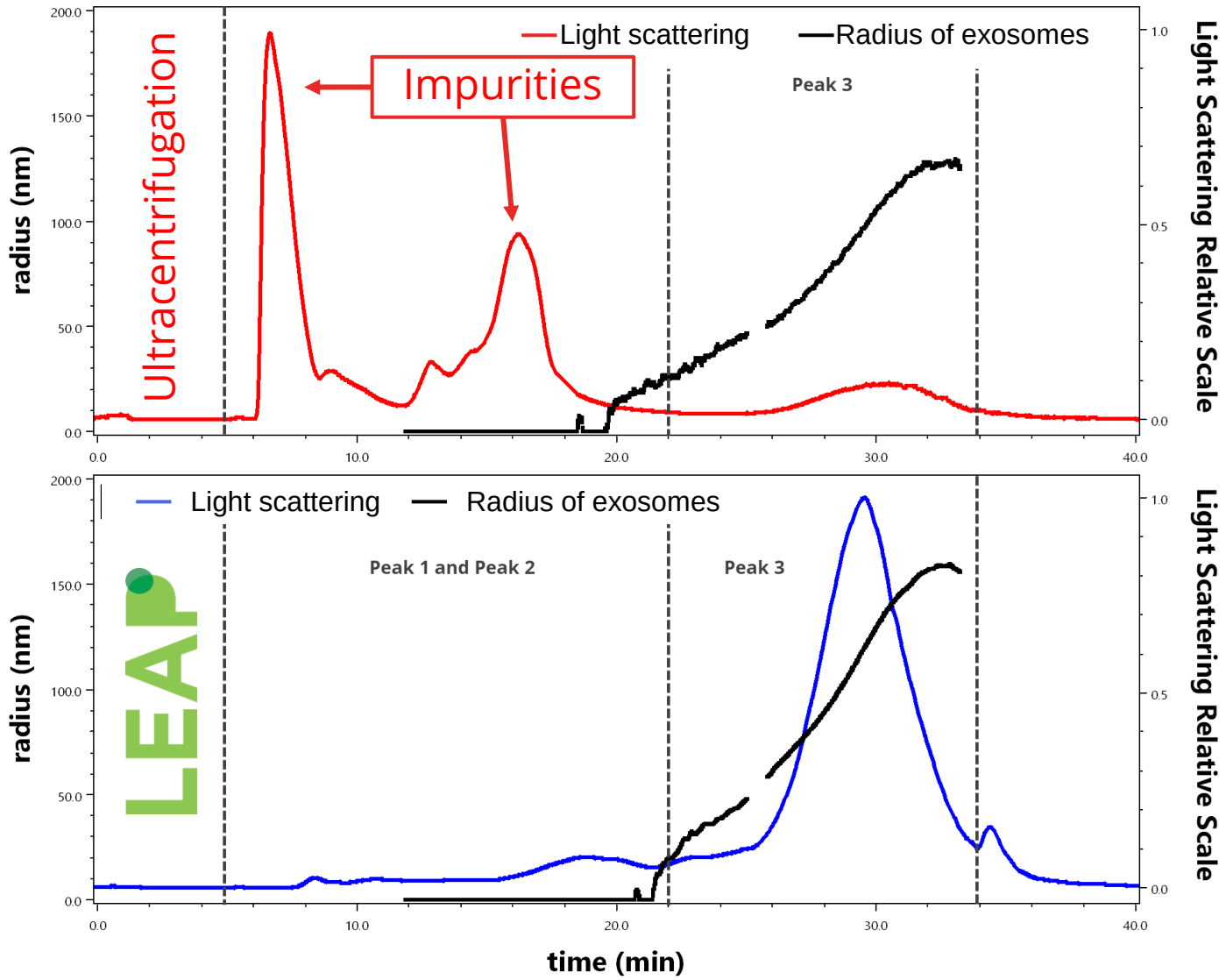
LEAP Process (Platelet-Exosomes) Example



- LEAP columns can be sanitized and reused
- Concentration factor ~ 70x

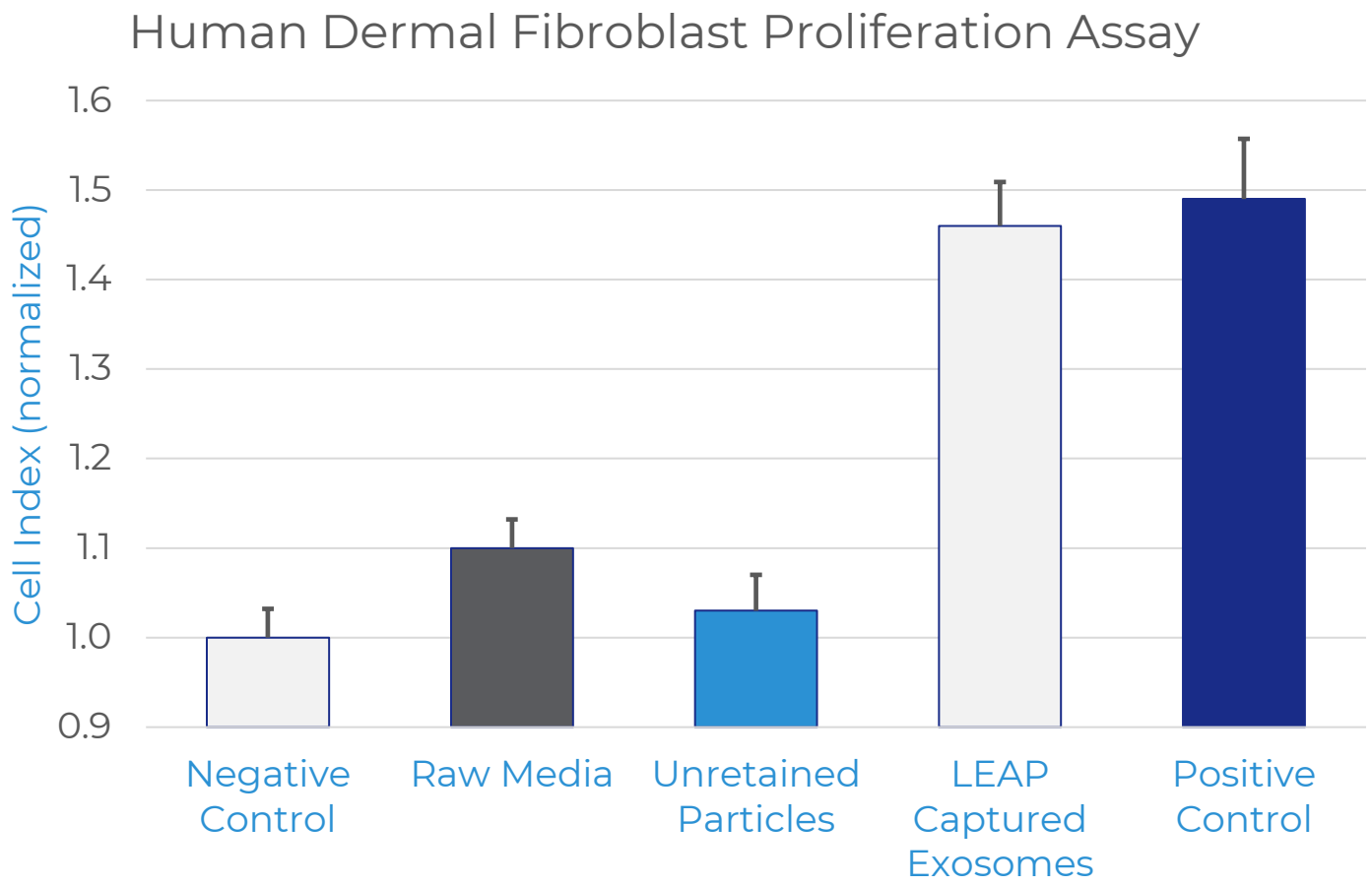
LEAP generates distinct elution peaks

Purity Analysis via AF4-MALS: Ultracentrifugation (UC) and LEAP



Impurities observed from UC separations are absent with LEAP

LEAP Purfies Biologically Active Particles



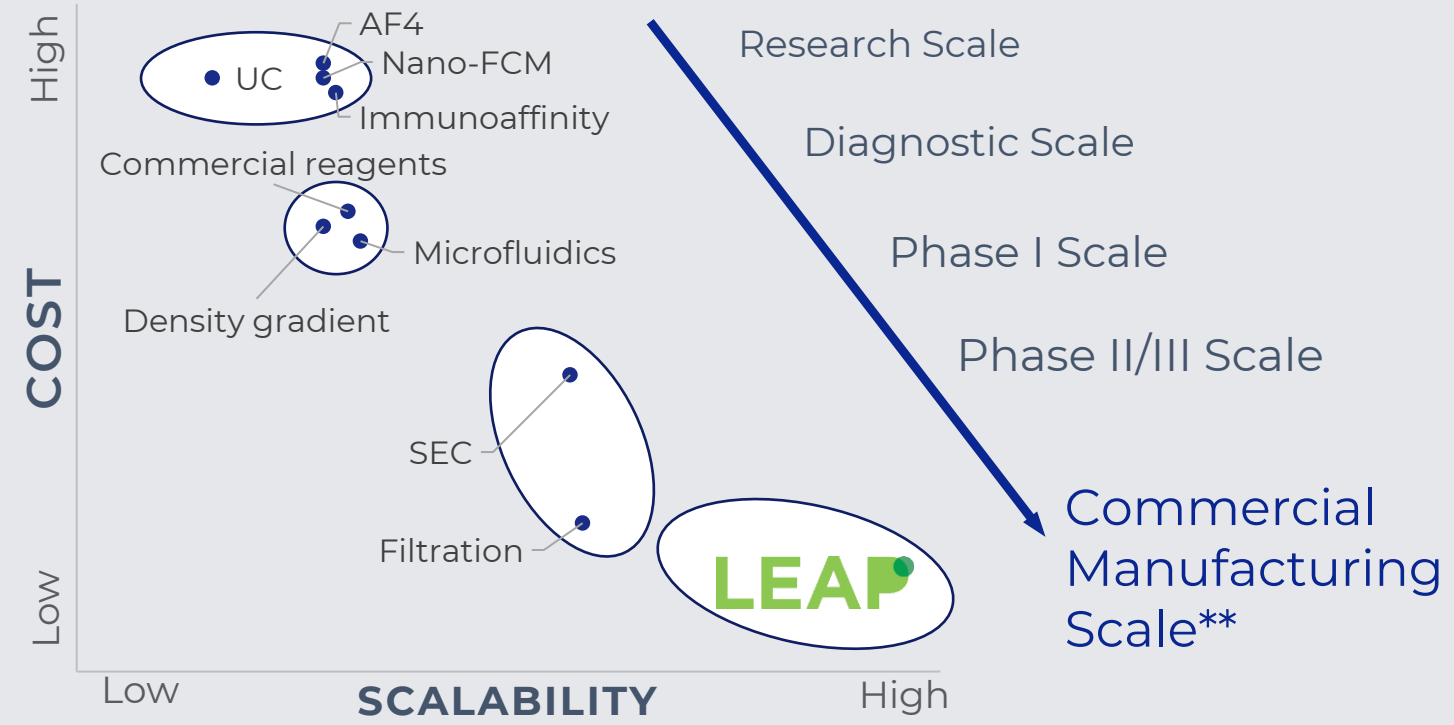
Unretained particles activity indistinguishable from negative control

LEAP captured exosomes demonstrate higher activity than raw media

LEAP is purifying active particles away from inactive ones

Exopharm Invented Commercial-scale Exosome Purification Technology

State of the Art, Exosome Purification as of June 2020*



LEAP Technology:

1. A recognised game-changer in exosome manufacture
2. Industry-standard equipment / processes
3. Low-cost consumables
4. Modular system scalable to meet global commercial supply

** LEAP assessment from Exopharm, based on industrial use to date; LEAP Patents granted in two countries and progressing through National phases at present

* Adapted from https://doi.org/10.1016/j.tibtech.2020.05.012

LEAP is Fully Scalable and cGMP Ready

AKTA pure 25

Proof-of-Concept Scale

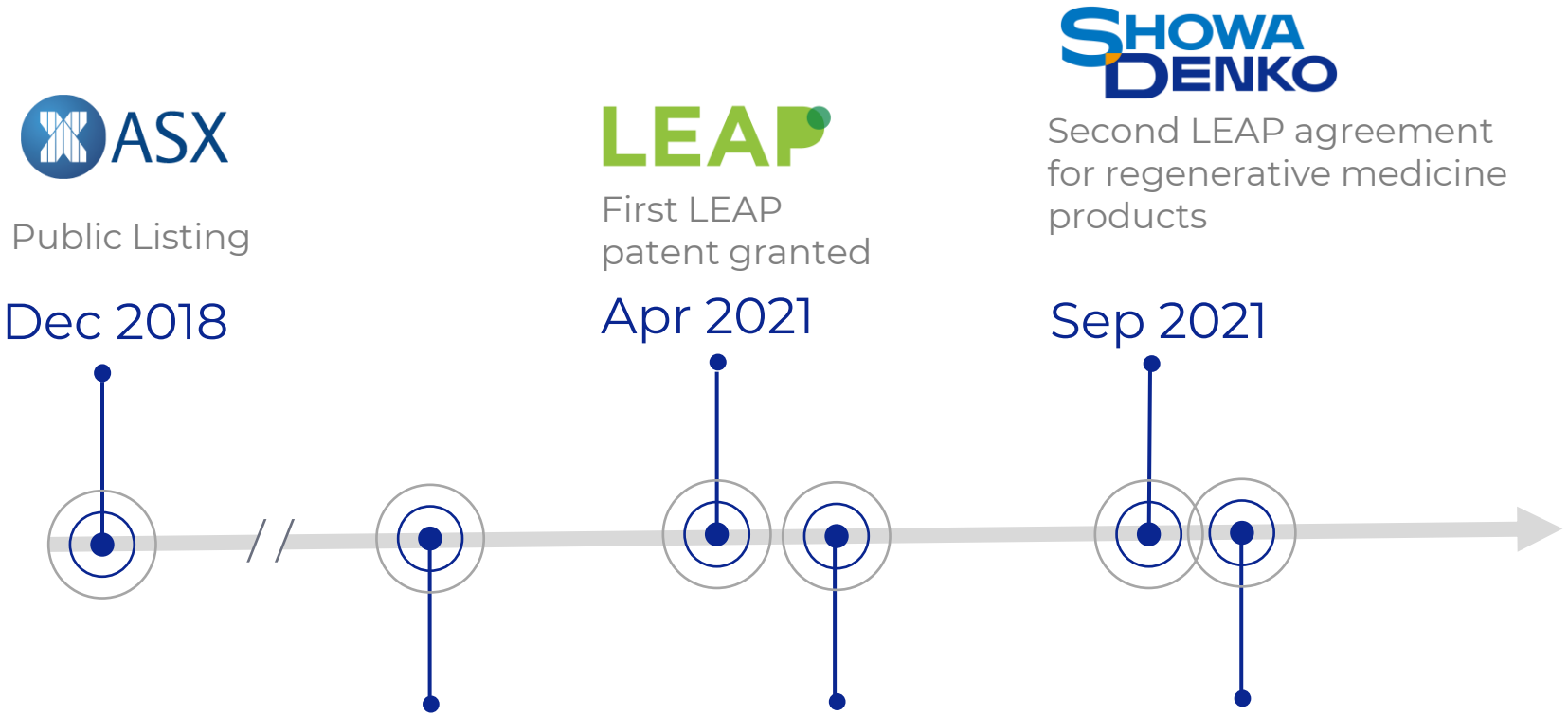
Scale-up, Clinical Trials

Commercial Manufacture

AKTA*process*™

AKTA*ready*™

LEAP into Today

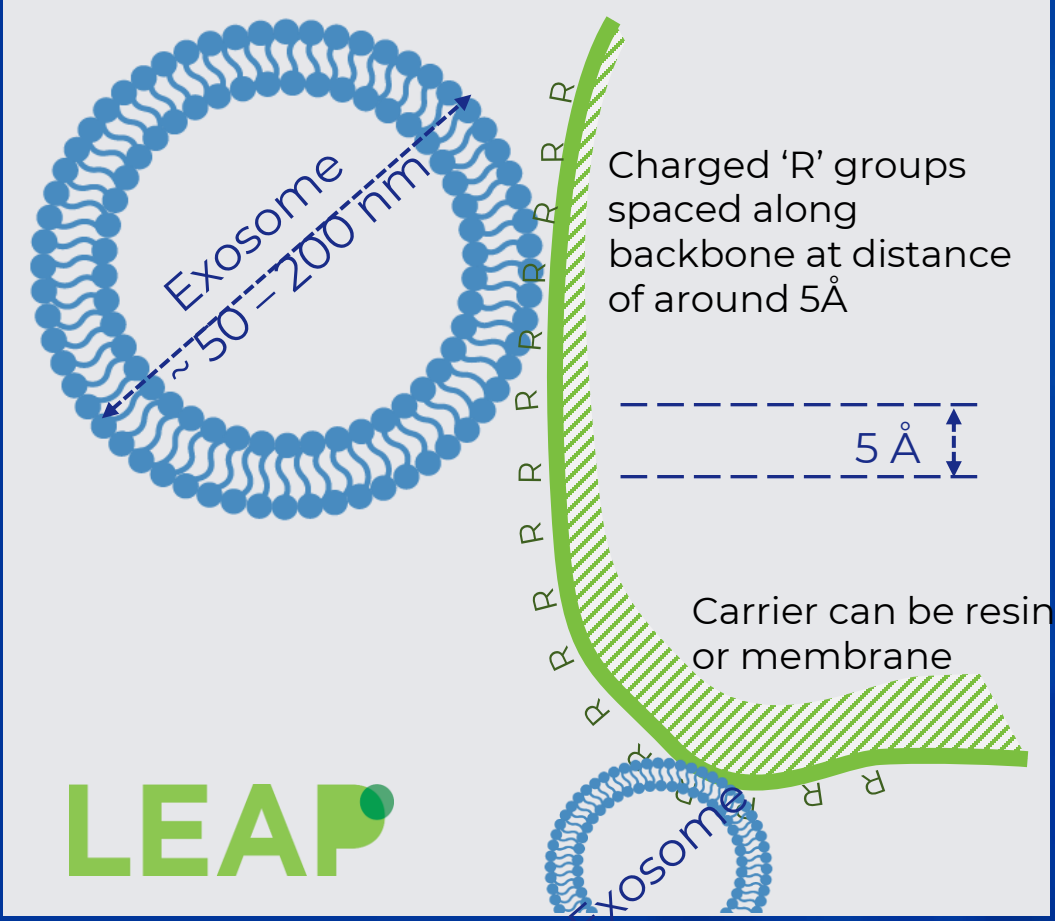


Ready to Go Commercial

- Tech transfer
- Exploration tools for small-scale evaluations
- Custom LEAP for specific applications

LEAP: Counter-intuition Yields Success

Scalable, economical GMP process for purifying Exosomes



- Initially developed in 2016
- Cation exchange process
- Exosomes have a net negative surface charge, but local positive surface charges allow for Exosomes to be reversibly bound using cation exchangers with unique ligand geometries
- This discovery applies to an ***entire class of ion exchangers***, including commercially available resins from leading manufactures

LEAP Connects Existing Chromatography Products to the Exosome Market

Exosome medicine companies and researchers

- Start small scale
- Expand formats, scales
- High yield industrial process

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LEAP


(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
(19) World Intellectual Property Organization
International Bureau
(43) International Publication Date
26 December 2019 (26.12.2019)
WIPO | PCT
(10) International Publication Number
WO 2019/241836 A1

Companies with cation exchange products covered by LEAP IP

SARTORIUS

cytiva

REPLIGEN
INSPIRING ADVANCES IN BIOPROCESSING

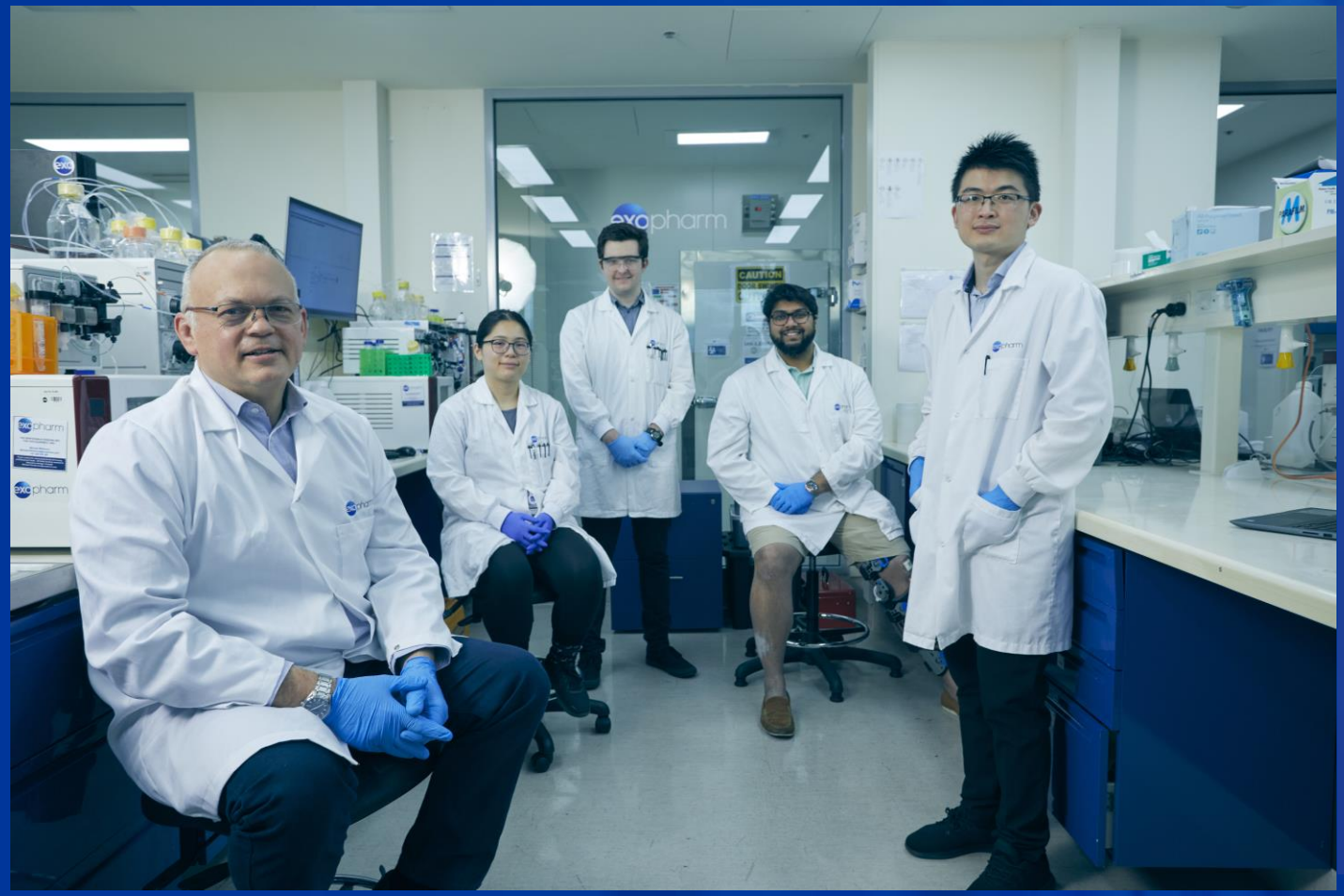
Astrea Bioseparations

thermo scientific

MERCK

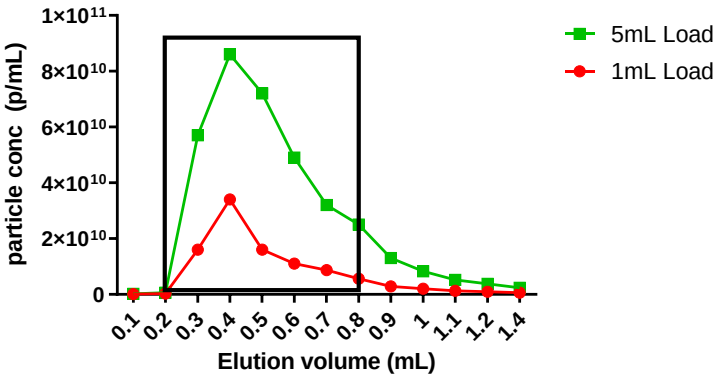
2. Recent Developments
   - Tech transfer
   - Selection tools
   - Source-specific solutions

Tech Transfer: LEAP Team Ready and Able



- Standardized documentation, process videos
- Supported by separate customer service group
- Technical team currently expanding considerably
- Exploring strategic R&D and commercial partnership
- International

Scaling Down to Scale Up



Flexible evaluation tools

- Any size columns (200 µL – 50 mL +)
- Gravity or pressure driven
- Particle capture profiles align closely with across various sized columns

Benefits of small scale

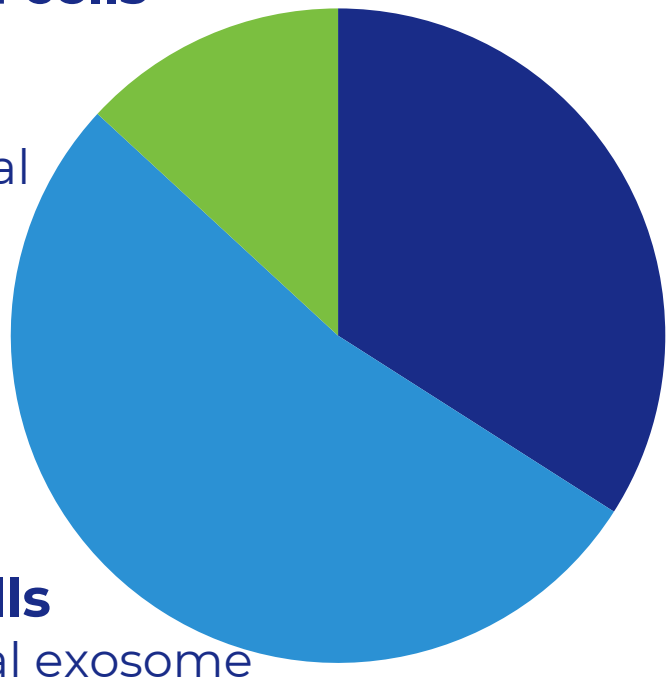
- Ability to quickly screen multiple resins against a specific feedstock
- Quickly test multiple parameters via design of experiment (DOE) principles
- Better suited for cell line development

Various Exosome Sources Bring Unique Purification Challenges

LEAP purification runs by exosome source

Suspended cells

- Stronger binding
- More initial protein



Donor sourced

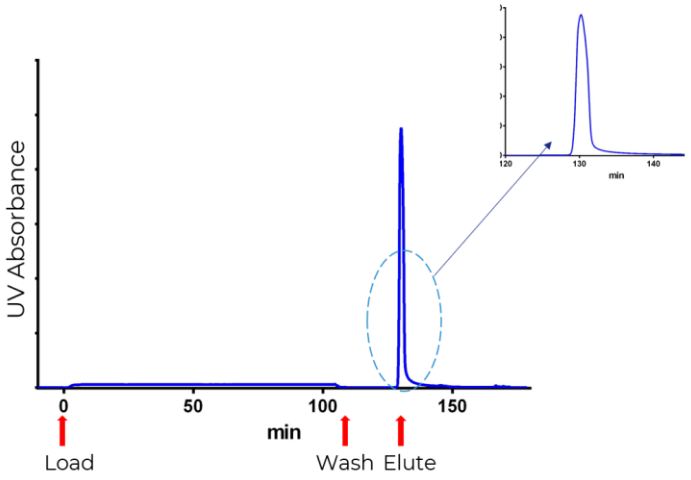
- Albumin
- Lipoprotein

Adherant cells

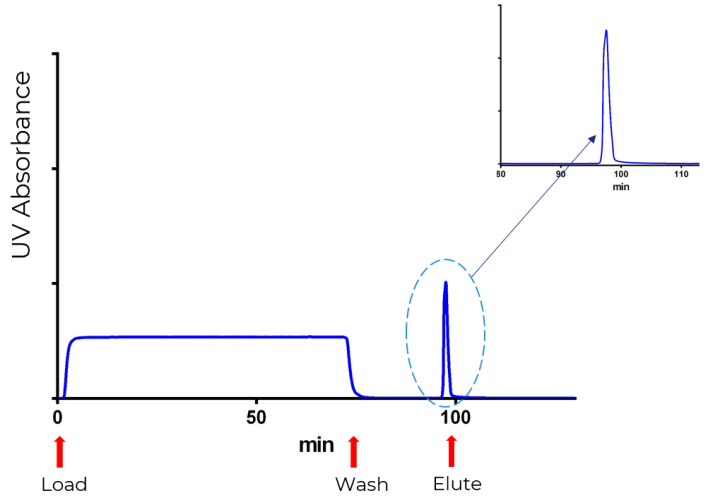
- Lower initial exosome concentrations
- Extracellular matrix proteins

Optimized LEAP Handles Them All

LEAP process, donor platelets



LEAP process, adherent cells

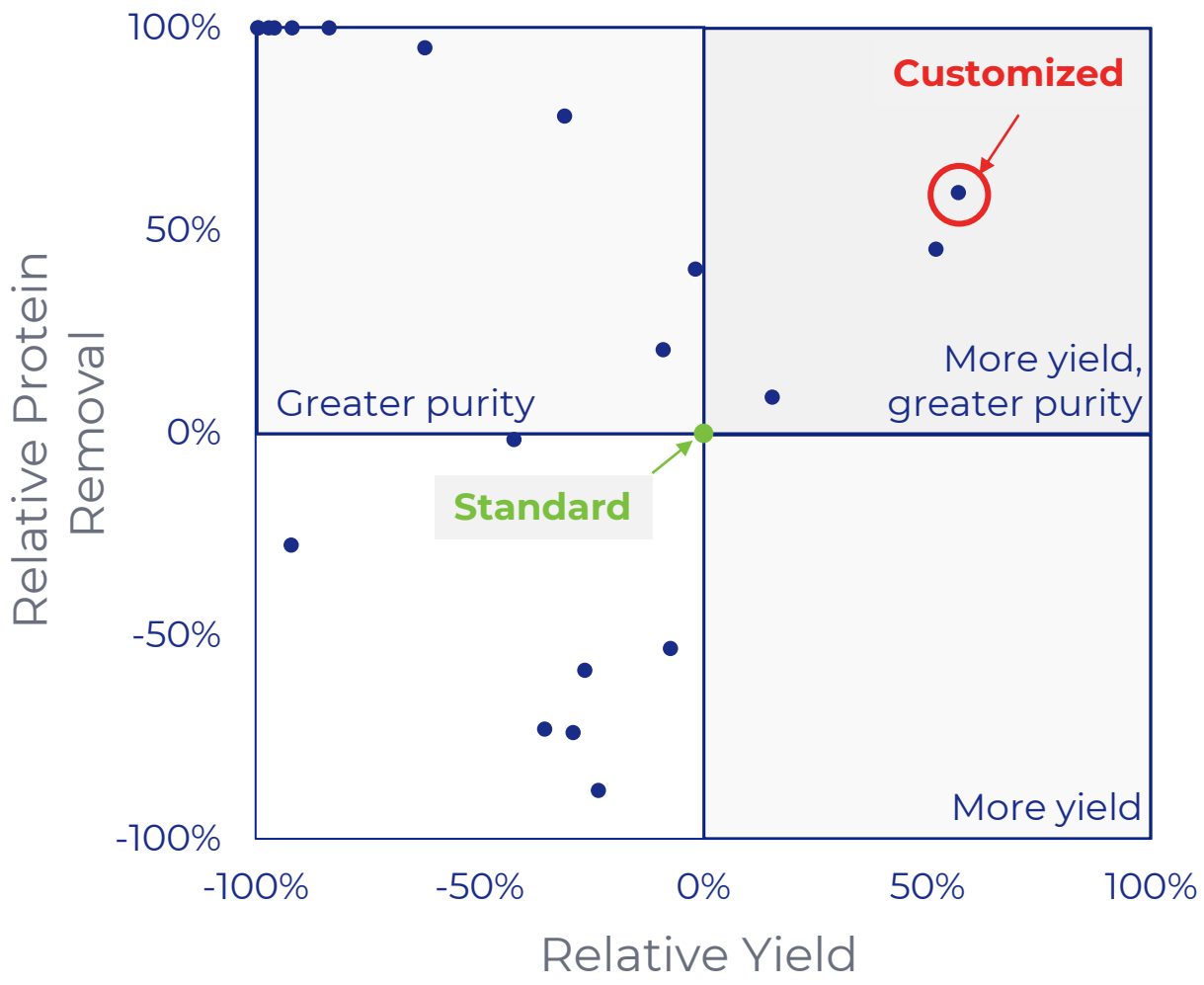


Starting media has different

- Initial concentration of exosomes
- Non-exosome particles (cellular debris)
- Overall protein quantities and sizes (e.g. lipoproteins)
- Output is comparable

LEAP captures exosomes regardless of source

LEAP is Highly Tuneable to Meet Specific Exosome Product and Process Requirements



Full Exploration of Numerous Resin Options

- Explore range of commercially available resins
- Design experiments to cover loading, wash, and elution variables
- Determine specific resins and experimental conditions for specific source materials and output requirements

Design of Future Cation Exchange Media

- Identify novel ligands for exosome specificity
- Leverage variety of substrate types (gels and structured)

3. Summary

Key Takeaways

LEAP patents cover commercial and novel chromatography products that purify exosomes

Exopharm has optimized and transferred the **LEAP** technology to multiple collaborators, each with distinct **source materials**

LEAP has the characteristics necessary to become *the STANDARD* purification process for exosome medicines

Going Big, Together

Exopharm works with strategic partners to bring exosome medicines to reality

Exopharm is open to partnerships:

- Technology transfer and non-exclusive out-licensing of existing IP
- Collaborative extension of IP to new uses, efficiency improvements, adjacent processing techniques, etc

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delivering transformative medicines

Thank you

Exopharm Ltd (ASX:EX1)

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