

## ASX ANNOUNCEMENT

### Investor Webinar Presentation

**20 August 2021, Melbourne, Australia:** Exopharm Limited (ASX:EX1) is pleased to announce its participation in the ShareCafe Small Cap "Hidden Gems" Webinar, to be held Friday 20<sup>th</sup> of August 2021 from 12:30pm AEST / 10:30am AWST.

Deputy CEO and Chief Commercial Officer, Dr Chris Baldwin will provide an overview of the Company and its exome nanoparticle and nucleic acid cargo technology which has a number of advantages for the delivery of nucleic acid cargos (such as the particles delivered in mRNA vaccines).

This webinar can be viewed live via Zoom and will provide viewers the opportunity to hear from and engage with a range of ASX-listed leading micro/mid cap companies.

To access further details of the event and to register at no cost, please copy and paste the following link into your internet browser:

[https://us02web.zoom.us/webinar/register/5416151767246/WN\\_8mZL8zwVSaqS1luuVcTmtw](https://us02web.zoom.us/webinar/register/5416151767246/WN_8mZL8zwVSaqS1luuVcTmtw)

A recorded copy of the webinar will be made available following the event.

A copy of the investor presentation to be delivered during the webinar is attached.

*By the Board - this announcement has been authorised for release by the board.*

### ***Company and Media Enquiries:***

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## **ABOUT EXOPHARM**

Exopharm (ASX:EX1) is a clinical-stage biopharmaceutical company using exosomes to deliver a new class of transformative medicines and generate revenue from multiple partnership deals.

Exosomes are seen by the Biopharma industry as a highly differentiated platform with the potential to enhance tissue delivery for a variety of payloads like mRNA and proteins – part of the global market for drug delivery systems which is growing at a compound annual growth rate (CAGR) of 5% and valued at around US\$170 billion in 2021.

For some medicines, exosomes are an alternative and superior means for delivery inside the body, alongside technologies such as lipid nanoparticles (LNP), cell penetrating peptides, viral vectors and liposomes.

Exopharm's LEAP technology solves the challenge of purifying clinical-grade exosomes at large scale and low cost.

Exopharm also has two exclusive proprietary technologies that allow advanced customisation of exosomes – the LOAD technology improves loading of nucleic medicines into exosomes and the EVPS technology allows exosomes to be directed towards selected cell types.

Exopharm uses variations and combinations of LOAD and EVPS to enable its Biopharma partners to improve delivery of their drug candidates and help them design and test new exosome medicines aimed at treating a wide scope of medical problems including neurological disease, infectious disease, cancer, and fibrosis.

## **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.



Exopharm Ltd

***Delivering Transformative Medicines***

August 2021



# IMPORTANT INFORMATION

**Purpose of presentation:** This presentation (including this document, any related video or oral presentation, any question and answer session and any written or oral material discussed or distributed in relation to this presentation) has been prepared by Exopharm Limited (ACN 163 765 991) (Exopharm or Company). This presentation is intended for sophisticated or professional investors (as those terms are defined in the Corporations Act 2001 (Cth)), and their professional investment advisors and has been prepared for the sole purpose of providing general high-level information on Exopharm and its operations.

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# Exopharm Ltd

## Overview

- Australian clinical-stage company at the forefront of developing transformative medicines based upon exosomes (extracellular vesicles, EVs)
- Over 40 staff based in Melbourne and Europe
- Publicly traded on the ASX (ASX:EX1) (listed Dec 2018)  
157.1 million shares on issue, current market cap. ~AU71 million
- A platform technology company with application to many exosome medicines – using our exclusive LEAP, LOAD and EVPS technologies

## Priorities

- Leading the emerging exosome field through our exosome technologies and exosome medicines
- Making exosome technologies available to established biopharmaceutical companies to empower the processes underpinning exosome manufacture
- Delivering existing and emerging drug candidates through precision exosome medicines

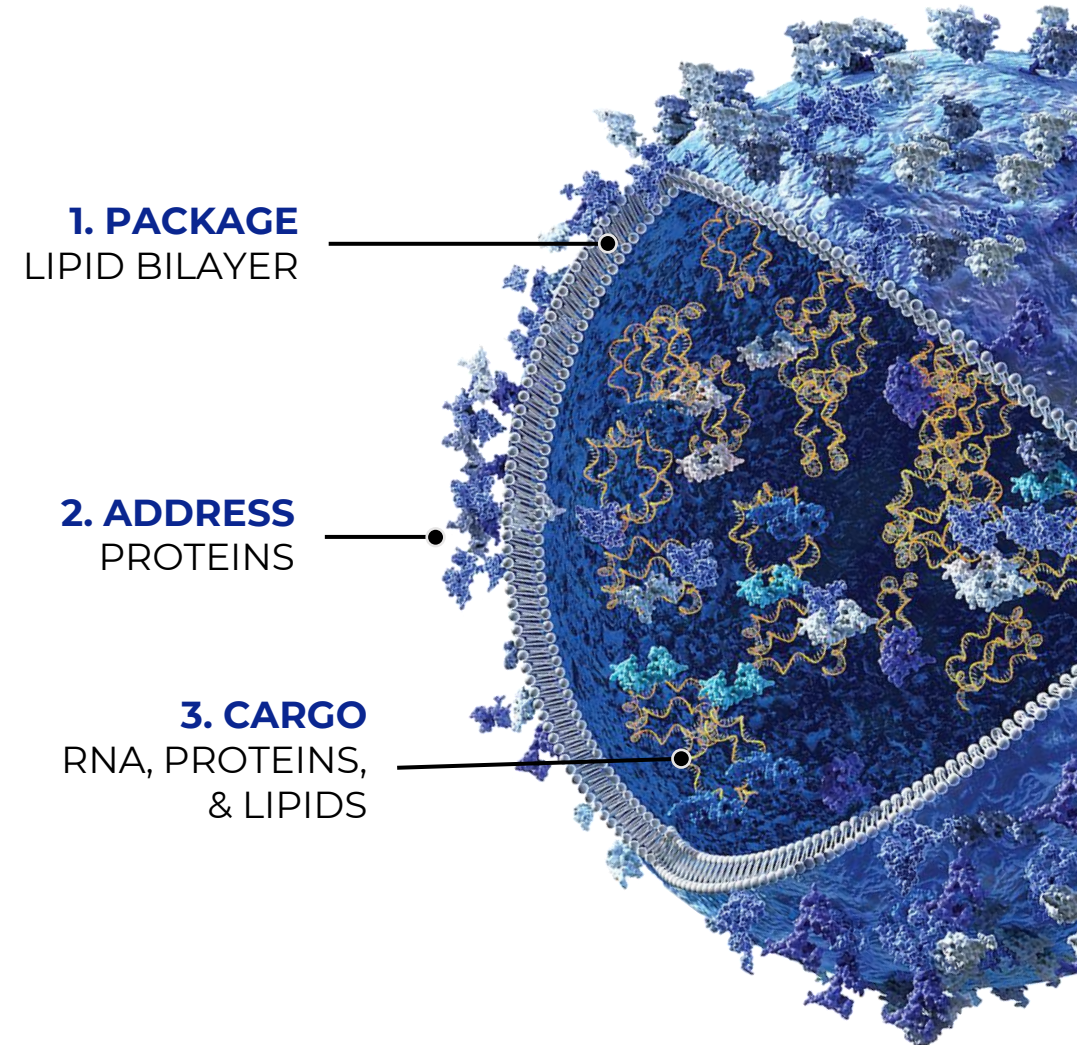


# Exosomes: Nature's Solution to Delivery in the Body

Exosomes (also referred to as extracellular vesicles or EVs) are **natural, multifunctional and stable nanoparticles that transfer cargo and messages between cells.**

Natural exosomes can be produced from cells in a bioprocessing facility.

- 1. PACKAGE** Outer membrane that forms the exosome (same membrane as human cells)
- 2. ADDRESS** External proteins that improve targeting of exosomes to specific cell types
- 3. CARGO** The materials delivered by exosomes, including instructions (RNA) and building materials (lipids, enzymes, proteins)





# Uncovered by Scientists in 2007, in 2021 Exosomes are Emerging as a New Frontier in Medicines Delivery

“

Exosomes represent a dynamically growing segment in life sciences with opportunities in research, diagnostics and therapeutic applications.

**Dr Uwe Gottschalk,**  
Chief Technology Officer  
for Lonza (2017)

”

“

Targeted and non-targeted exosomes offer a highly differentiated platform with the potential to enhance tissue delivery for a variety of payloads like mRNA and proteins.

**Dr Madhu Natarajan,** Head of the  
Rare Diseases Drug Discovery Unit  
at Takeda (2020)

”

“

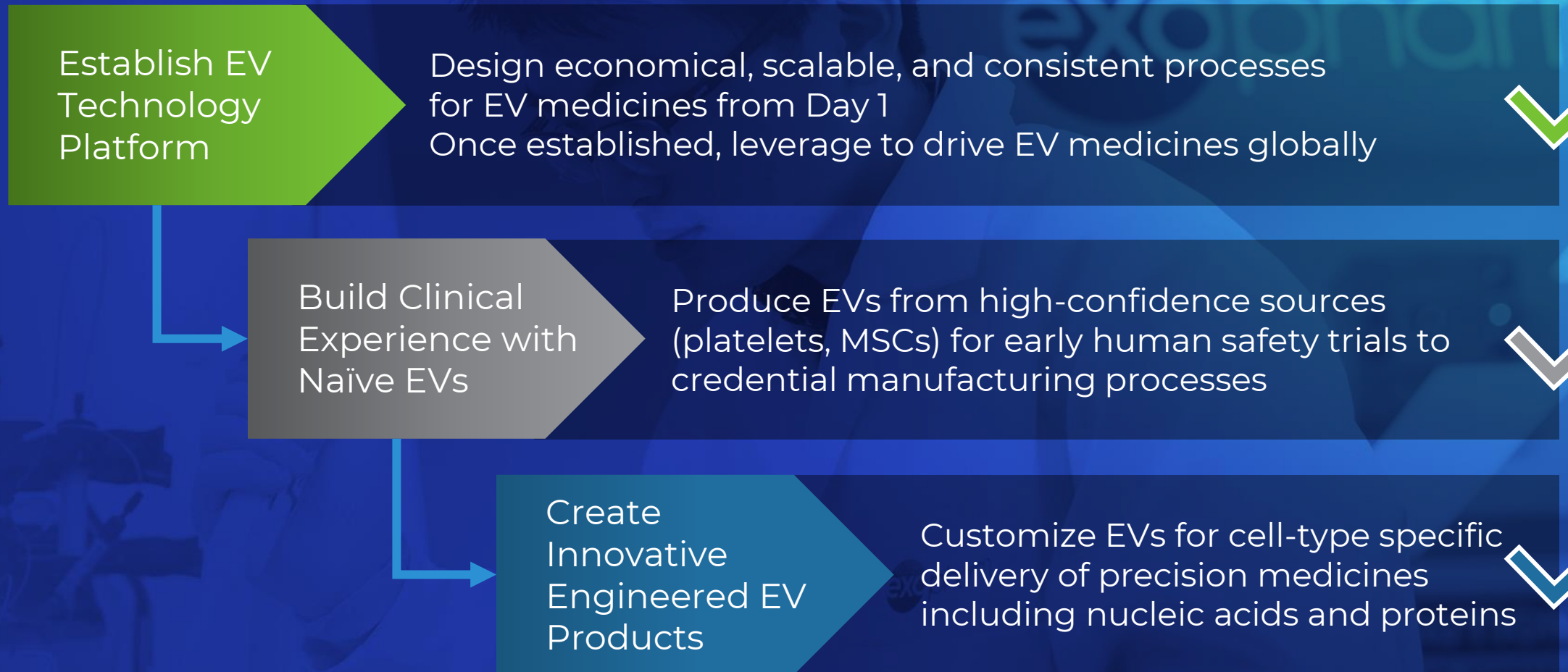
Now is the time for researchers to usher in a new era of therapeutic possibilities using RNA-delivering, natural exosome vesicles.

**Professor Phillip Askenase MD,**  
Yale University School of  
Medicine (2020)

”

**Exopharm is at the forefront of exosome medicines**

# From Platform to Products, Exopharm's EV Medicine Strategy







# Three Unique & Powerful Technologies Underpin our Partnering and Exosome Medicines

**LEAP**

Scalable, economical GMP process for purifying exosomes

**EVPS**

Tropism-conferring approach for engineering exosome surface proteins

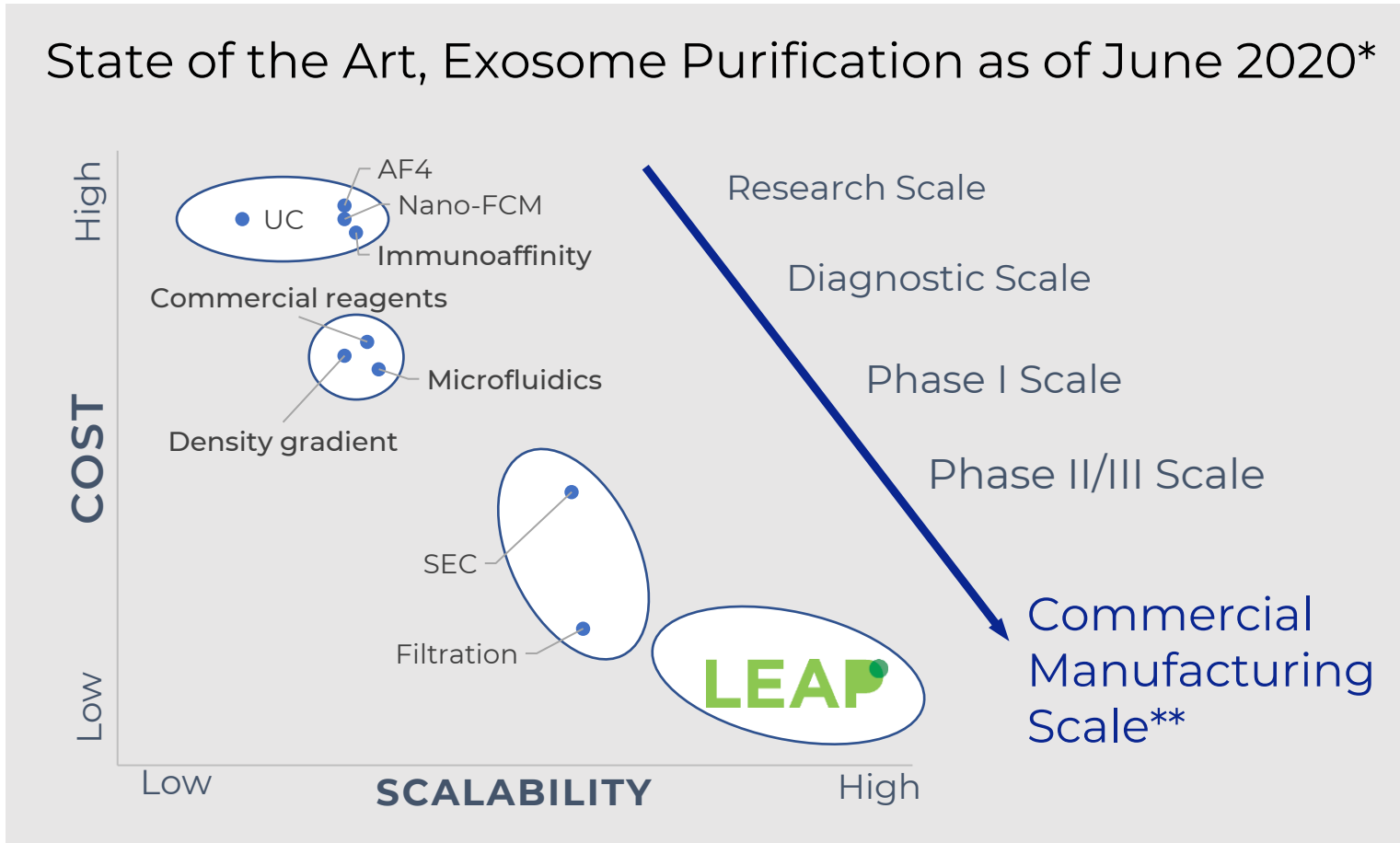
**LOAD**

Activity enhancing method for delivering RNA by exosomes

*EVPS US patent is granted, LOAD patent is progressing and LEAP patent is granted in Russia and progressing through national phase in USA under fast-track process.*



# Exopharm Has the Only Known Technology for Commercial-scale Exosome Medicine Purification



Unlike all alternatives, LEAP technology:

1. Uses industry-standard equipment/processes
2. Uses low-cost, reusable consumables
3. Scales economically beyond thousands of doses
4. Is proprietary (i.e. patent applied for)

**LEAP unlocks the potential of Exosome Medicines**

\*\* LEAP assessment from Exopharm, based on industrial use to date; LEAP Patents processing through National phases at present.

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

# SARS-CoV-2 RNA Vaccines Use “Artificial Exosomes”

Pfizer and Moderna SARS-2 vaccines package RNA into artificial synthetic lipid nanoparticles (LNPs)

However, LNPs have **major limitations for drug delivery:**

- Toxicity
- Anti-LNP immune response
- Inefficient cellular delivery

Naturally occurring exosomes from human cells have evolved an optimal composition over billions of years **and have none of these limitations.**

## nature

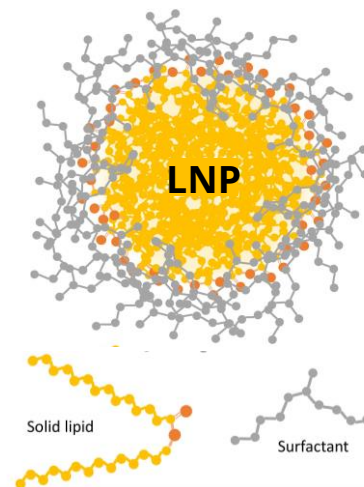
NEWS FEATURE · 12 JANUARY 2021

### How COVID unlocked the power of RNA vaccines

The technology could revolutionize efforts to immunize against HIV, malaria, influenza and more.

Elie Dolgin

Solid lipid nanoparticle



DOI: 10.3389/fmolb.2020.587997



## Webinar:

Overcoming the  
Delivery Challenge for  
Nucleic Acid Drugs

**26 August 2021**

10 – 10:30 am AEST



## Presenters

Dr Jennifer King  
King BioConsulting

***RNA Medicines and Delivery:  
The Importance for the  
Future of Medicine***



Dr Anna Cifuentes-Rius  
Monash University

***Delivery by LNPs and  
Exosomes: When They Are  
Useful and Why***



# LEAP Exosomes Overcome Significant Issues Associated with LNP Delivery

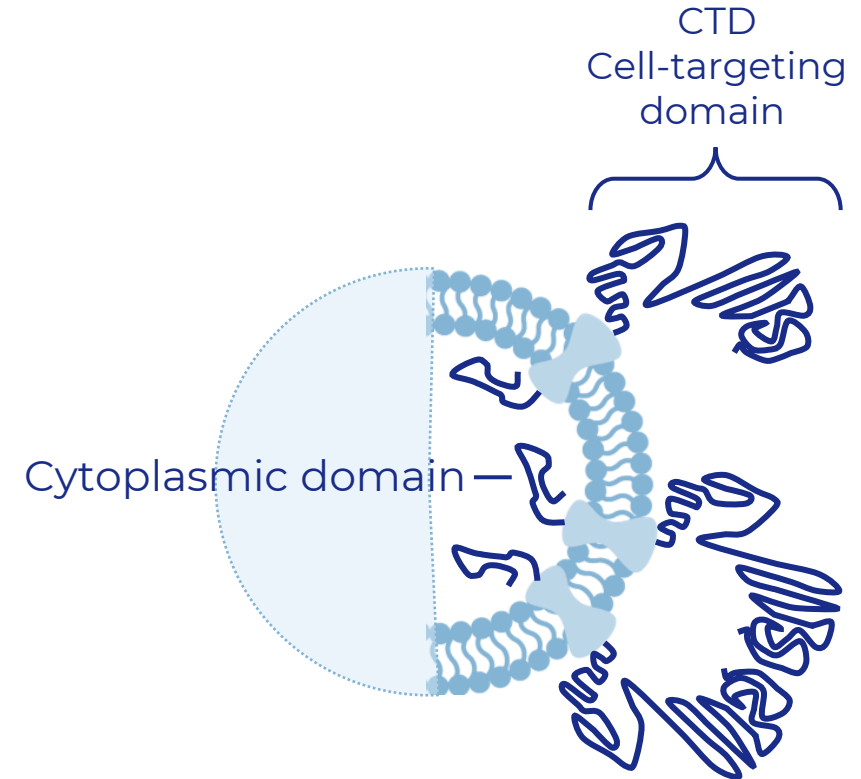
	Lipid Nanoparticles	Exosomes
Targeting	Yes	Yes
Stability	Yes	Yes
Efficient Uptake	<b>No</b>	Yes
Non-toxic	<b>No</b>	Yes
Frequent dosing	<b>No</b>	Yes
Scalability without LEAP (Manufacture/Purification)	Yes	<b>No</b>
<b>Scalability with Exopharm's LEAP Technology</b>		<b>YES</b>

# EVPS Construct

**Cargo:** Cytoplasmic domain for reporter proteins (or anti-viral) carried as cargo

**VSVg:** Transmembrane domain passes through cell and exosome bilipid layers

**CTD:** Cell-targeting domain, a protein used by to enter cells (such as a viral coat protein, nanobody, cell-penetrating peptide, etc)

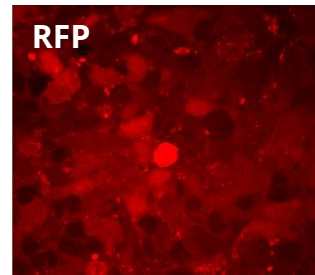
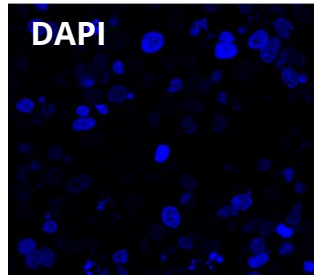


Exosome from EVPS modified producer cell

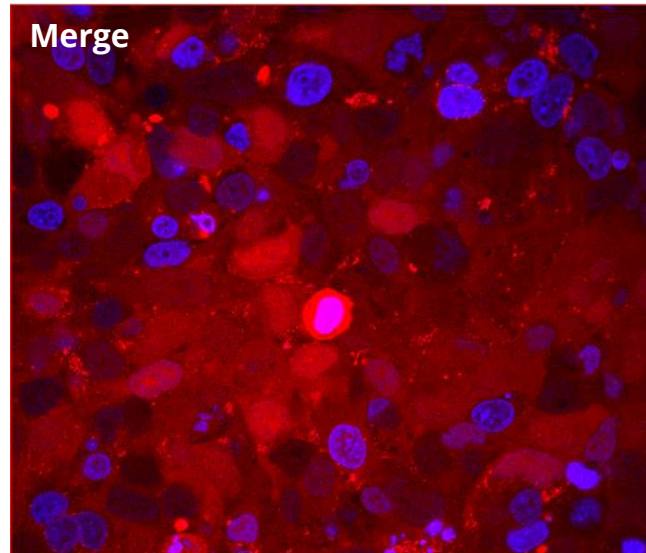
Note: VSVg = vesicular stomatitis virus glycoprotein

# Confocal Imaging of Stable Spike-RFP Stable Cell line

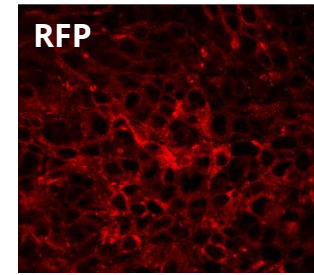
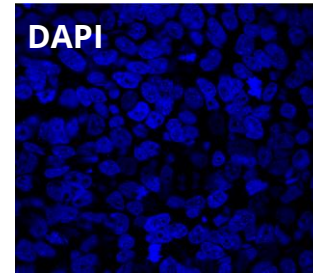
**RFP**



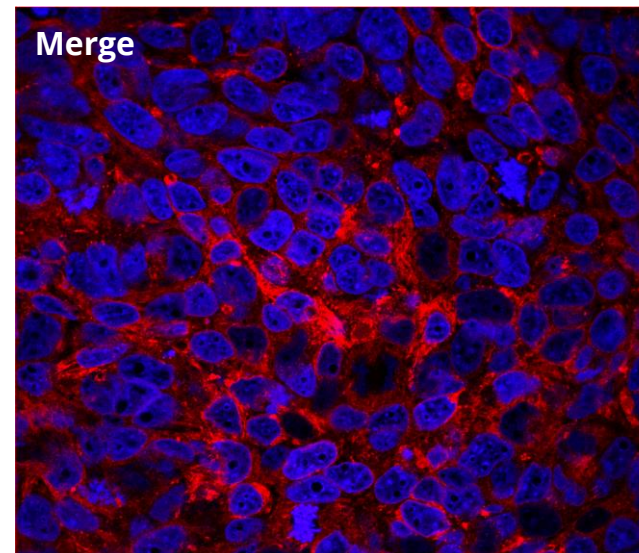
RFP everywhere within the cell



**RFP control vector**

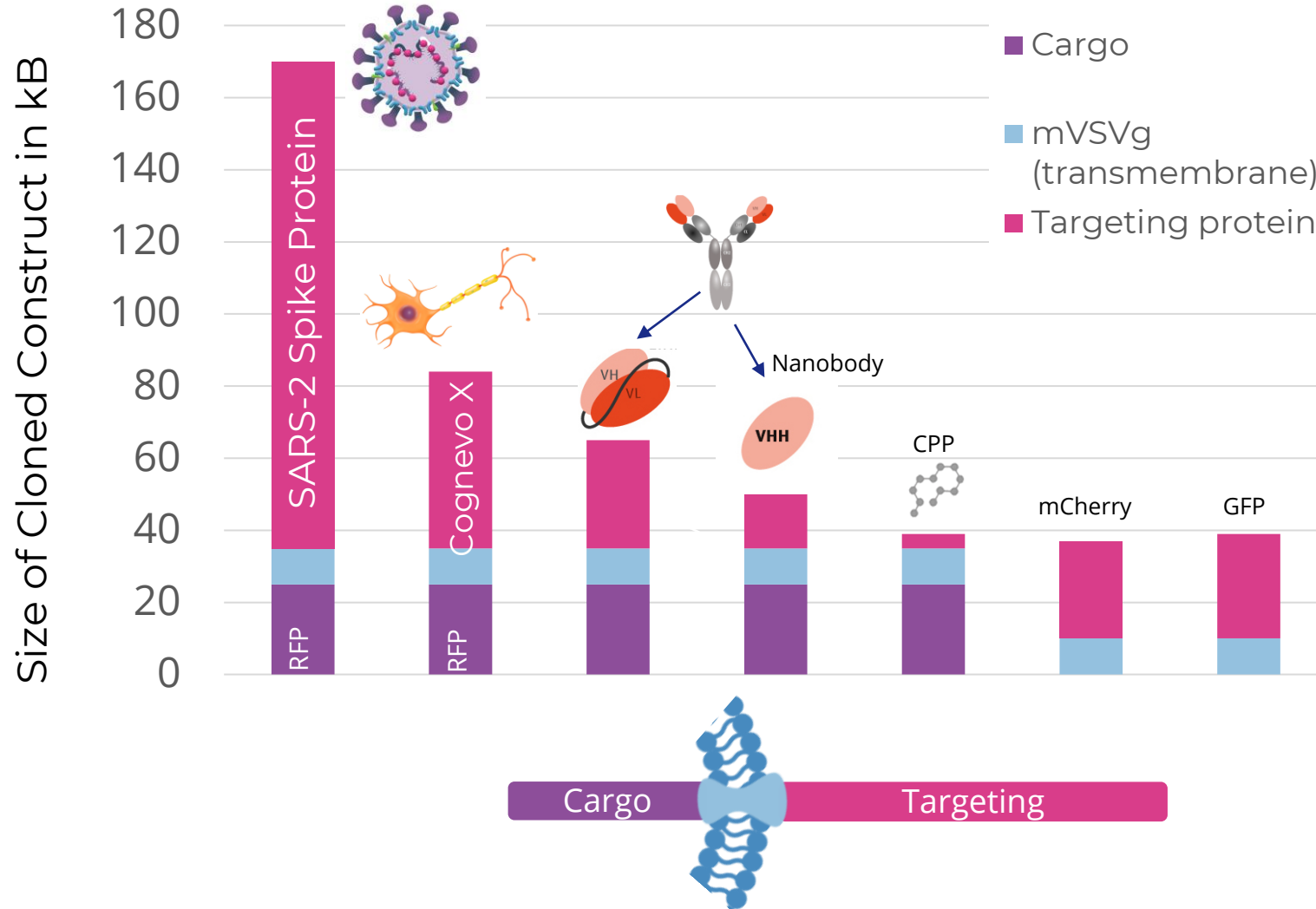


'Membrane-localized' RFP expression



**CoV-S EVPS Construct # 3R**

# EVPS Technology Proven with Large Targeting Moieties



Using EVPS construct, very large proteins can be expressed by stable producer cell lines.

Technology can be applied to wide range of targeting proteins and/or large protein cargoes

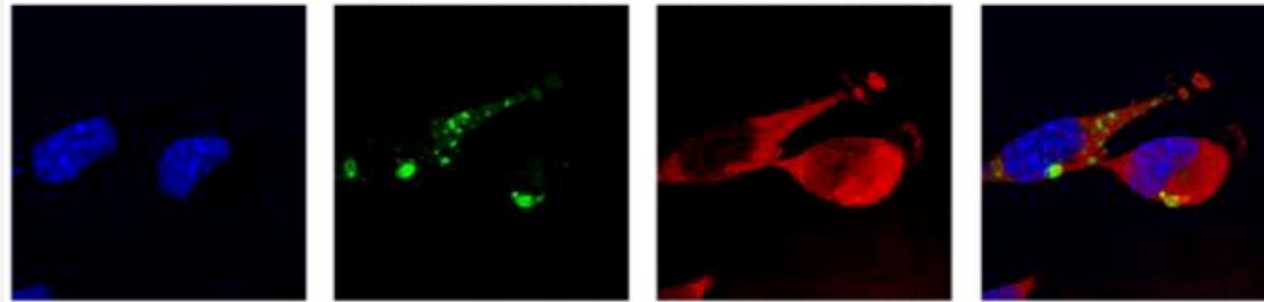


# LOAD Localizes RNA into EVs

## Standard approach

Producer cells electroporated with siRNA

siRNA evenly across the cytoplasm



Nuclei

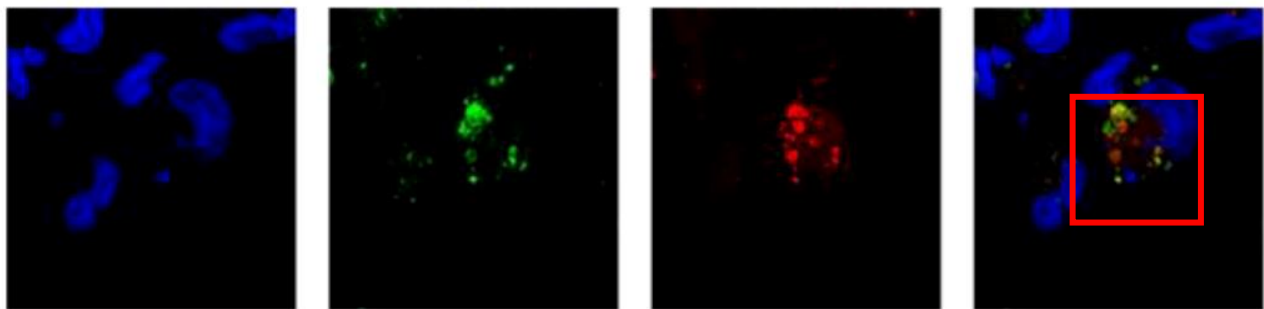
EVs (cd63)

siRNA

Merge

## LOAD

Producer cells electroporated with LOAD powered siRNA

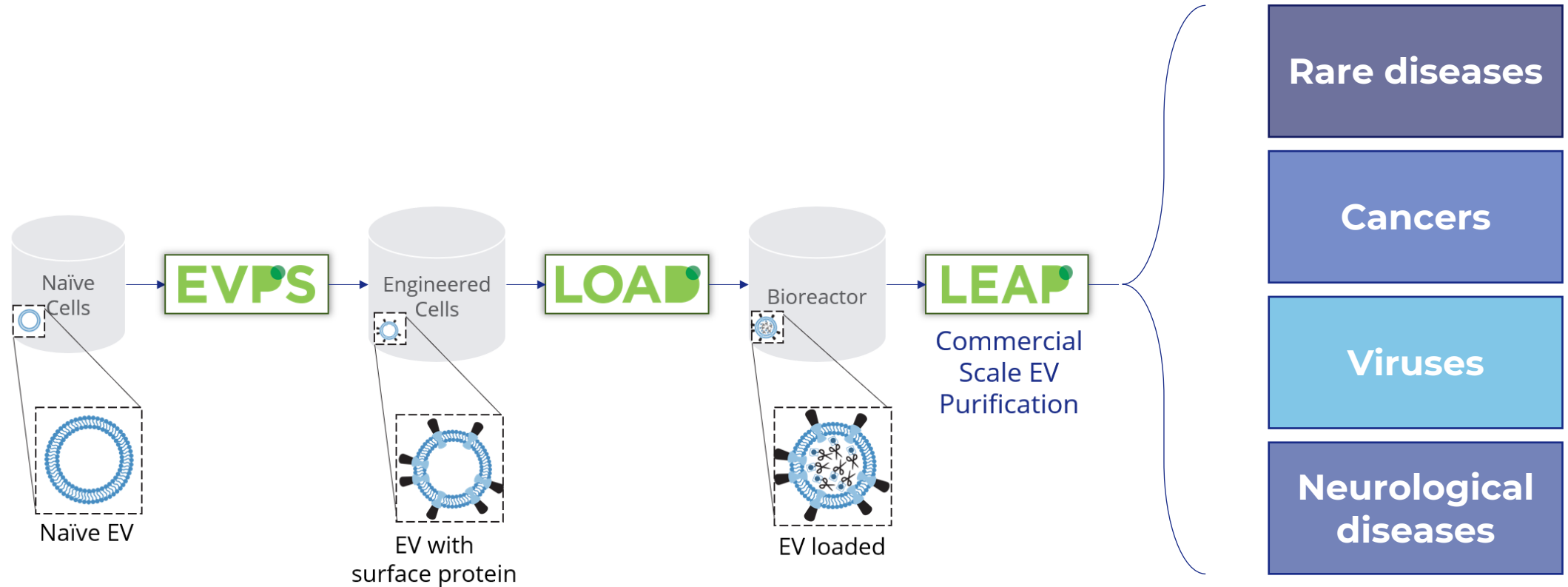


siRNA is localized within EVs; enrichment factor of 10 – 100x

LOAD technology enriches RNAi near EV biogenesis sites

Therapeutic effect/cost of delivery improve substantially using LOAD technology

# Together these Technologies Create a Precision Medicine Factory



# Right Place, Right Time, Right People



# Thank you

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