

# THE STATE OF THE VESICLE

January 2024





## Foreword

January has emerged as an exciting month for the field of extracellular vesicles and exosomes, showcasing a series of significant developments that highlight the sector's vibrancy and potential for groundbreaking shifts. The month has been marked by strategic collaborations between industry leaders and esteemed research institutions, fostering advancements that promise to redefine therapeutic approaches and enhance disease management.

In the realm of dermatology, clinical trial has reported promising outcomes using exosome therapy for severe skin conditions, showcasing significant healing and safety, and highlighting the versatility and efficacy of exosome-based treatments. As well as the initiation of a Phase I clinical trial for an innovative exosome-based vaccine targeting SARS-CoV-2, a development that underscores the commitment to leveraging advanced biotechnologies for more robust and lasting immune responses against infectious diseases.

Furthermore, the FDA have granted IND clearance for novel exosome therapy aimed at tackling acute neurological condition, signifying a step forward in the quest to address complex challenges such as drug delivery across the blood-brain barrier.

As we review these developments, it is evident that the field of extracellular vesicles and exosomes is not only thriving but is also at the forefront of pioneering medical advancements, poised to revolutionize healthcare through innovation and collaborative spirit.

The Exosome Consulting Team.

TABLE ON CONTENT

INDUSTRY ..... 4

INVESTMENTS..... 5

RESEARCH ..... 6

UPCOMING EVENTS (NEXT TWO MONTHS)..... 8

## Companies mentioned

### **A**

Aegle Therapeutics ..... 4

Aruna Bio ..... 4

### **B**

Bio-Techne ..... 4

### **C**

Capricor ..... 4

### **E**

EverZom ..... 5

EXO Biologics.....4

ExoXpert.....4

### **I**

Inteligex.....4

### **N**

NurExone ..... 4, 5

### **R**

Rion .....4

## Industry

– **Capricor Therapeutics** has partnered with the NIH under the Project NextGen initiative for a Phase I clinical trial of their novel exosome-based multivalent SARS-CoV-2 vaccine, which aims to offer broader and more durable COVID-19 protection. This collaboration emphasizes the potential of Capricor's StealthX™ vaccine, which delivers both S and N proteins, to provide a more effective and lasting immune response against COVID-19 and other infectious diseases.

[Press release on company's website.](#)

– **Aruna Bio's** IND Clearance: The FDA has cleared Aruna Bio's IND application for AB126, a novel exosome therapy for acute ischemic stroke. This groundbreaking decision allows for the commencement of a Phase 1b/2a clinical trial, highlighting AB126's potential in traversing the blood-brain barrier with anti-inflammatory and neuroprotective properties.

[Press release via GlobeNewswire](#)

– **Aegle Therapeutics'** Clinical Trial Success: Aegle Therapeutics reports outstanding results from the first patient in its Phase 1/2a AGLE-102™ clinical trial. The patient, treated for a burn wound, achieved significant healing and reduced edema without safety issues, marking a significant advancement in EV therapy for severe dermatological conditions.

[Press release via PR Newswire](#)

[Link to Clinical Trial](#)

– **EXO Biologics** announced the global launch of **ExoXpert™**, a 100% subsidiary CDMO focusing on exosomes. ExoXpert™, leveraging

the ExoPulse™-developed platform, aims to supply R&D-grade and GMP-compliant exosomes for clinical trials. This launch addresses the industry's need for specialized exosome manufacturing and aims to facilitate the development of exosome-based therapies.

[Press release via EXO Biologics](#)

[ExoXpert website](#)

– **NurExone** and Inteligex Collaboration: The collaborative project between NurExone and Inteligex, focusing on spinal cord injury therapies, is now underway. Funded by the Israel-Canada bilateral Eureka program, this initiative combines NurExone's exosome platform with Inteligex's cell-based therapy expertise, aiming to develop innovative treatments for chronic spinal cord injuries.

[Press release via GlobeNewswire](#)

– **Rion**, clinical-stage regenerative medicine company presented at the 42nd Annual JP Morgan Healthcare Conference on January 10, 2024. Dr. Behfar's (company's co-founder) presentation focused on Rion's advanced developments in platelet-derived regenerative exosome technology, emphasizing its significant impact in various areas of regenerative medicine.

[Press release via Business Wire](#)

– **Bio-Techne's** presentation at the JP Morgan Healthcare Conference 2024 highlighted the remarkable growth potential of its Exosome Diagnostics business, with expectations to expand at a rate % annually. As part of their strategic growth plan, Bio-Techne aims to

nearly double its revenues to \$1.5 billion by fiscal year 2025, with the Exo Dx Prostate test and a developing kidney rejection test being key drivers. This focus on exosome-based diagnostics underscores the company's commitment to advancing medical diagnostics through innovative technology.

[Bio Techne press release](#)

## Investments

– **NurExone's** Private Placement: NurExone Biologic Inc. has successfully closed a significant private placement, raising 2 million CAD. This funding is earmarked for advancing their exosome therapy towards clinical trials and expanding their intellectual property portfolio, demonstrating strong investor confidence in NurExone's innovative technology.

[Press release via GlobeNewswire](#)

– In the wake of strategic transformation, **EVERZOM** is actively seeking investment partners to propel the advancement of its innovative therapeutic initiatives, namely EVerGel, aimed at digestive tissue restoration, and EViv, which utilizes naïve exosomes for organ regeneration. For more information, please refer below.

[Link](#)

## Research

There were 896 publications for extracellular vesicles and/or exosomes in January. Complete list for January can be downloaded [here](#). Note: some publications can be behind a paywall.

### Retractions:

X. Zhang, Y. Zhang, X. Qiu, J. Cai, Z. Yang, and F. Song, "Extracellular Vesicles Derived from Lung Cancer Cells Induce Transformation of Normal Fibroblasts into Lung Cancer-Associated Fibroblasts and Promote Metastasis of Lung Cancer by Delivering lncRNA HOTAIR," *Stem Cells International*, vol. 2022, Article ID 3805013, 13 pages, 2022. [Link](#)

Y. Hu, Y. Wang, T. Chen, Z. Hao, L. Cai, and J. Li, "Exosome: Function and Application in Inflammatory Bone Diseases," *Oxidative Medicine and Cellular Longevity*, vol. 2021, Article ID 6324912, 17 pages, 2021. [Link](#)

M. Shen and T. Chen, "Mesenchymal Stem Cell-Derived Exosomes and Their Potential Agents in Hematological Diseases," *Oxidative Medicine and Cellular Longevity*, vol. 2021, Article ID 4539453, 13 pages, 2021. [Link](#)

Y. Li, H. Yu, Q. Ma et al., "si-PDGFR $\beta$ -Loaded Exosomes Suppress the Progression of Glioma by Inhibiting the Oxidative Associated PI3K/Akt/EZH2 Signaling Pathway," *Oxidative Medicine and Cellular Longevity*, vol. 2022, Article ID 5081439, 15 pages, 2022. [Link](#)

Y. Xu, Z. Lin, L. He et al., "Platelet-Rich Plasma-Derived Exosomal USP15 Promotes Cutaneous Wound Healing via Deubiquitinating EIF4A1," *Oxidative Medicine and Cellular Longevity*, vol. 2021, Article ID 9674809, 14 pages, 2021. [Link](#)

X. Wu, C. Wu, W. Gu, H. Ji, and L. Zhu, "Serum Exosomal MicroRNAs Predict Acute Respiratory Distress Syndrome Events in Patients with Severe Community-Acquired Pneumonia," *BioMed Research International*, vol. 2019, Article ID 3612020, 11 pages, 2019. [Link](#)

L. Wang, J. Jiang, T. Zhou, X. Xue, and Y. Cao, "Improvement of Cerebral Ischemia-Reperfusion Injury via Regulation of Apoptosis by Exosomes Derived from BDNF-Overexpressing HEK293," *BioMed Research International*, vol. 2021, Article ID 6613510, 8 pages, 2021. [Link](#)

Gu N, Wang X, Di Z, Xiong J, Ma Y, Yan Y, Qian Y, Zhang Q, Yu J. Silencing lncRNA FOXD2-AS1 inhibits proliferation, migration, invasion and drug resistance of drug-resistant glioma cells and promotes their apoptosis via microRNA-98-5p/CPEB4 axis. *Aging (Albany NY)*. 2019; 11:10266–10283. [Link](#)

## Research Highlights:

**MSC-derived exosomes in Bronchopulmonary Dysplasia:** The study explores the therapeutic effects of mesenchymal stromal cells-derived extracellular vesicles (MSC-EVs) on lung and brain tissues in a model of hyperoxia-induced bronchopulmonary dysplasia (BPD), showing significant protection against oxidative stress and reduction in fibrosis. These findings highlight the potential of MSC-EVs, especially those produced to clinical-grade standards, as a novel treatment avenue for BPD, improving pulmonary function and preventing fibrosis. [Link](#)

**Truncated PD1 Engineered Gas-Producing Extracellular Vesicles for Ultrasound Imaging:** A novel ultrasound contrast agent, Gp-EVtPD1, has been developed to both image and block PDL1 expression in tumors, potentially enhancing the efficacy of cancer immunotherapy. This agent utilizes engineered extracellular vesicles with truncated PD1 to bind PDL1 with high affinity, enabling precise imaging of PDL1 levels and promoting the degradation of PDL1 in cells, thereby boosting anti-tumor immune responses. [Link](#)

**Semaglutide's Role in Cardiovascular Disease:** A study on semaglutide, a medication used in diabetes treatment, shows its potential in modulating prothrombotic and atherosclerotic mechanisms in patients with cardiovascular disease. Differential exosomes-protein cargo was identified on EAT explants after semaglutide treatment. [Link](#)

**Aspergillus fumigatus EVs in Fungal Keratitis:** The study indicates that extracellular vesicles

from *Aspergillus fumigatus* can modulate immune cell function. This discovery offers a novel approach for treating fungal keratitis, potentially leading to more effective therapies for this challenging eye condition. [Link](#)

**EV-Derived RNA in Prostate Cancer:** A study highlights the potential of using RNA from extracellular vesicles as biomarkers for the progression of prostate cancer. This discovery paves the way for more precise and less invasive diagnostics, potentially improving the management and treatment outcomes for prostate cancer patients. [Link](#)

**Retinal Progenitor Cells in RD Treatment:** Human retinal organoid-derived retinal progenitor cells' extracellular vesicles have shown efficacy in preventing retinal pigment epithelium injury. This research suggests a new therapeutic approach for retinal degeneration, harnessing the regenerative properties of these cells to counteract retinal damage. [Link](#)

***Candida albicans* and IFN Signalling:** A study published in Nature Microbiology has unveiled that extracellular vesicles from *Candida albicans* can trigger type I interferon signaling. This discovery provides valuable insights into the body's innate immune response against this common fungal pathogen. [Link](#)

**Salivary EVs and Aging:** A comparative study on salivary extracellular vesicles across different ages and commercially available isolation techniques suggests their potential as biomarkers for age-related diseases. This study reveals differences in EVs recovery,



protein concentration, and purity, and investigates the impact of age on these

factors. It identifies effective methods for EVs recovery and purity. [Link](#)

## Upcoming Events (next two months)

### February:

7-9 — Workshop Single Extracellular Vesicles analysis, Paris, France

26 — Morgan Stanley European Healthcare Conference

27 — UBS European Healthcare Conference

### March:

4-5 — ISEV workshop: Large Extracellular Vesicles, Columbus, US

11-15 — Workshop on Extracellular Vesicles Separation and Characterization, Charlottesville, USA

## Disclaimer

Exosome Consulting retains copyright over all text and images featured in this newsletter. Unauthorized reproduction, distribution, or use of this material, in part or in whole, without the express prior written permission of Exosome Consulting is strictly prohibited. If permission for use is granted, the source must be prominently acknowledged as "Exosome Consulting" in all forms of distribution. The content provided in this newsletter is intended solely for informational and promotional purposes and does not constitute legal, financial, medical, or any other type of regulated professional advice. The mention of specific companies, individuals, events, research findings, or any other information does not imply endorsement or support by Exosome Consulting. Such references are provided for informational purposes only and should not be interpreted as recommendations or endorsements by Exosome Consulting. Exosome Consulting acknowledges and respects the trademarks, copyrights, and other intellectual property rights of third parties. All trademarks, service marks, trade names, and logos mentioned in the newsletter belong to their respective owners. The use of these marks in our newsletter does not signify endorsement or affiliation with these entities. While every effort is made to ensure the accuracy and reliability of the information contained in this newsletter, it is provided "as is" without any warranty of any kind. Exosome Consulting does not guarantee the validity, accuracy, or completeness of any information and will not be liable for any errors, omissions, or inaccuracies in the information or for any user's reliance on the information. Users are solely responsible for verifying the information as being appropriate for any use. Exosome Consulting shall not be responsible for and disclaims all liability for any loss, liability, damage (whether direct, indirect, or consequential), personal injury, or expense of any nature whatsoever which may be suffered due to the access and use of the newsletter, any information contained within, or personal information or materials transmitted over our system. Neither Exosome Consulting nor any third party or data or content provider shall be liable for any loss, liability, damage, personal injury, or expense of any nature arising from any delays, inaccuracies, errors in, or omission of any share price information or the transmission thereof, or for any actions taken in reliance thereon or occasioned thereby or by reason of non-performance or interruption, or termination thereof. The views and information presented in this newsletter are subject to change at any time without notice. Exosome Consulting reserves the right to make amendments or updates to the information, layout, content, and format of this newsletter at any time without prior notice. We cannot guarantee that the information will always be up to date or that the newsletter will always be available for use.



© 2014 Exosome Consulting

[www.exosomeconsulting.com](http://www.exosomeconsulting.com)

[info@exosomeconsulting.com](mailto:info@exosomeconsulting.com)