

# Exosomes – Pipeline Insight, 2020

<https://marketpublishers.com/r/EE54BE3C5E6FEN.html>

Date: September 2020

Pages: 110

Price: US\$ 3,000.00 (Single User License)

ID: EE54BE3C5E6FEN

## Abstracts

This report can be delivered to the clients within 72 - 96 Hours

DelveInsight's, "Exosomes – Pipeline Insight, 2020" report provides comprehensive insights about 50+ companies and 50+ pipeline drugs in Exosomes pipeline landscape. It covers the pipeline drug profiles, including clinical and nonclinical stage products. It also covers the therapeutics assessment by product type, stage, route of administration, and molecule type. It further highlights the inactive pipeline products in this space.

### Geography Covered

Global coverage

### Exosomes Understanding

#### Exosomes: Overview

Exosomes are small membrane vesicles of endocytic origin that are secreted by most cells in culture and are created upon the fusion of the multivesicular body (MVB)—an intermediate endocytic compartment—with the plasma membrane. They are nano-sized vesicles capable of transferring DNAs, micro RNAs, non-coding RNAs, and lipids, with or without direct cell-to-cell contact, which represents a novel method of intracellular communication. MVB—a type of intraluminal vesicles (ILV's)—buds inward into the endosomal lumen. Exosomes, produced in endosomal compartment of most eukaryotic cells, are released in the form of ILV's in instances where the MVB fuses with the cell surface (the plasma membrane). The exosomes and other extracellular vesicles (EV's) are present in tissues of the multicellular organisms, including biological fluids, such as blood, urine, and cerebrospinal fluid. They can also be released in vitro by the cultured

cells into their growth medium.

## Characteristics of Exosomes and Function

Exosomes are basically formed by the cellular endocytic pathway, which consists of three different stages:

The plasma membrane invagination from the endocytic vesicles.

The second stage is the inward building of endosomal membrane which gives rise to multivesicular bodies (MVB's).

The third and the last stage is when the MVB's fuse with the plasma membrane and releases the vesicular contents, which in turn forms the exosomes.

The membrane proteins, which undergo the endosomal pathway, exhibit the same stages. Different types of lipidic molecules are known for their involvement in the exosome formation and release like phosphatidic acid and ceramides.

## Composition

Due to its protein and lipid content, exosomes are special, providing an additional hint for their identification. Exosomes mainly include fusion and transport proteins (annexins and flotillin), heat shock proteins (HSP70), CD's proteins (CD9, CD81), and phospholipases and other lipid-related proteins. Due to its protein and lipid content, exosomes are special, providing an additional hint for their identification. Exosomes mainly include fusion and transport proteins (annexins and flotillin), heat shock proteins (HSP70), CD's proteins (CD9, CD81), and phospholipases and other lipid-related proteins. One can use all of these proteins as positive markers.

## Biological functions of Exosomes

Exosomes are nano-sized EVs that have impressive physiological properties and emerge through the inward budding of the late endosomal membrane called multivesicular bodies (MVBs). As MVBs are fused with the plasma membrane, exosomes are released into the extracellular environment. They can either be taken up by target cells residing in the microenvironment or transported by biological fluids to distant sites. Exosomes have a small diameter range of 40–100 nm and a density of

1.13–1.19 g/ml in sucrose solution. They can be sedimented at 100,000 g by centrifugation. Also, exosome membranes are enriched with proteins from cholesterol, sphingomyelin, ceramide and lipid raft.

## Exosomes Emerging Drugs Chapters

This segment of the Exosomes report encloses its detailed analysis of various drugs in different stages of clinical development, including phase II, I, preclinical and Discovery. It also helps to understand clinical trial details, expressive pharmacological action, agreements and collaborations, and the latest news and press releases.

## Exosomes Emerging Drugs

### Neural exosomes (AB126): ArunA Biomedical

ArunA Biomedical's proprietary neural exosomes cross the blood–brain barrier inherently and enable drugs and drug-combinations to naturally target cells and treat patients with a range of neurological disorders. Preclinical studies have demonstrated the therapeutic potential of these exosomes in multiple stroke models. These studies have shown that the exosomes enhance the nervous system's self-repair mechanisms, translating into structural and functional benefits which may have improved survival, reduced infarct size, and improved mobility.

### ExoPr0: ReNeuron

Company's CTX-derived exosomes candidate is currently in the preclinical stage and is being developed as a novel vector for delivering the third party biological drugs. ExoPr0 has demonstrated potential as both a novel therapeutic candidate as well as a drug delivery vehicle in established preclinical disease models. The company intends to devote more significant resource to the application of ExoPr0 as a vector for delivering drugs.

### exoIL-12: Codiak Biosciences

exoIL-12 is a precision-engineered exosome therapeutic candidate expressing IL-12 on the surface of the exosome by molecular fusion to Codiak's proprietary scaffold protein,

PTGRFN. Developed via Codiak's proprietary engEx platform, exoIL-12 is designed to target T-cells and Natural Killer cells and induce systemic anti-tumor immunity. Data from Codiak's preclinical studies suggest that when administered intratumorally, exoIL-12 is retained in the tumor microenvironment, thus resulting in potent antitumor immunity and an improved toxicity profile compared to recombinant IL-12.

Further product details are provided in the report.....

## Exosomes: Therapeutic Assessment

This segment of the report provides insights about the different Exosomes based drugs segregated based on following parameters that define the scope of the report, such as:

### Major Players in Exosomes

There are approx. 50+ key companies which are developing the therapies for Exosomes. The companies which have their Exosomes drug candidates in the early stages, i.e. phase I include United Therapeutics Corporation.

### Phases

DelveInsight's report covers around 50+ products under different phases of clinical development like

Late-stage products (Phase II and Phase II/III)

Mid-stage products (Phase II and Phase II/III)

Early-stage products (Phase I/II and Phase I) along with the details of

Pre-clinical and Discovery stage candidates

Discontinued & Inactive candidates

Route of Administration

Exosomes pipeline report provides the therapeutic assessment of the pipeline drugs by the Route of Administration. Products have been categorized under various ROAs such as

Intramuscular

Intranasal

Parenteral

Intravenous

Topical

Molecule Type

Products have been categorized under various Molecule types such as

Small molecules

Vaccines

Polymers

Peptides

Enzymes

Product Type

Drugs have been categorized under various product types like Mono, Combination and Mono/Combination.

### Exosomes: Pipeline Development Activities

The report provides insights into different therapeutic candidates in phase II, I, preclinical and discovery stage. It also analyses Exosomes therapeutic drugs key

players involved in developing key drugs.

### Pipeline Development Activities

The report covers the detailed information of collaborations, acquisition and merger, licensing along with a thorough therapeutic assessment of emerging Exosomes drugs.

### Report Highlights

The companies and academics are working to assess challenges and seek opportunities that could influence Exosomes R&D. The therapies under development are focused on novel approaches to treat/improve Exosomes.

Anjarium's Hybridosome platform, coupled with the targeting technology and proprietary manufacturing methods, is a promising technology to overcome the delivery hurdles today's most potent RNA therapeutic candidates face.

**Therapeutic Benefits:** Exosomes are directly internalized by recipient cells, which prevent a multiplicity of potential concerns associated with the administration of living cells, and exosomes have therapeutic benefits, at least equivalent to their cellular source.

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Exosomes Pipeline Analysis

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Unmet Needs

Impact of Drugs

### Exosomes Report Assessment

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Pipeline Assessment

Inactive drugs assessment

Unmet Needs

## Key Questions

### Current Treatment Scenario and Emerging Therapies:

How many companies are developing Exosomes drugs?

How many Exosomes drugs are developed by each company?

How many emerging drugs are in mid-stage, and late-stage of development for the treatment of Exosomes?

What are the key collaborations (Industry–Industry, Industry–Academia), Mergers and acquisitions, licensing activities related to the Exosomes therapeutics?

What are the recent trends, drug types and novel technologies developed to overcome the limitation of existing therapies?

What are the clinical studies going on for Exosomes and their status?

What are the key designations that have been granted to the emerging drugs?

## Key Players

Direct Biologics

Codiak BioSciences

ExoCyte Therapeutics

Avalon GloboCare

United Therapeutics Corporation

Capricor Therapeutics

Avalon GloboCare

Azymus Therapeutics

Versatope Therapeutics

Lamellar Biomedical

Celltrion

## Key Products

LAMELLASOME IPF-NA

exoSTING

ET-08

AVA 201

Unexisome

CAP 2003

exoIL 12

AVA 203

AZ 001

VT 105



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