

EVOLUTIONARY BIOLOGICS

EXO SERIES



NEUROBIOLOGICS

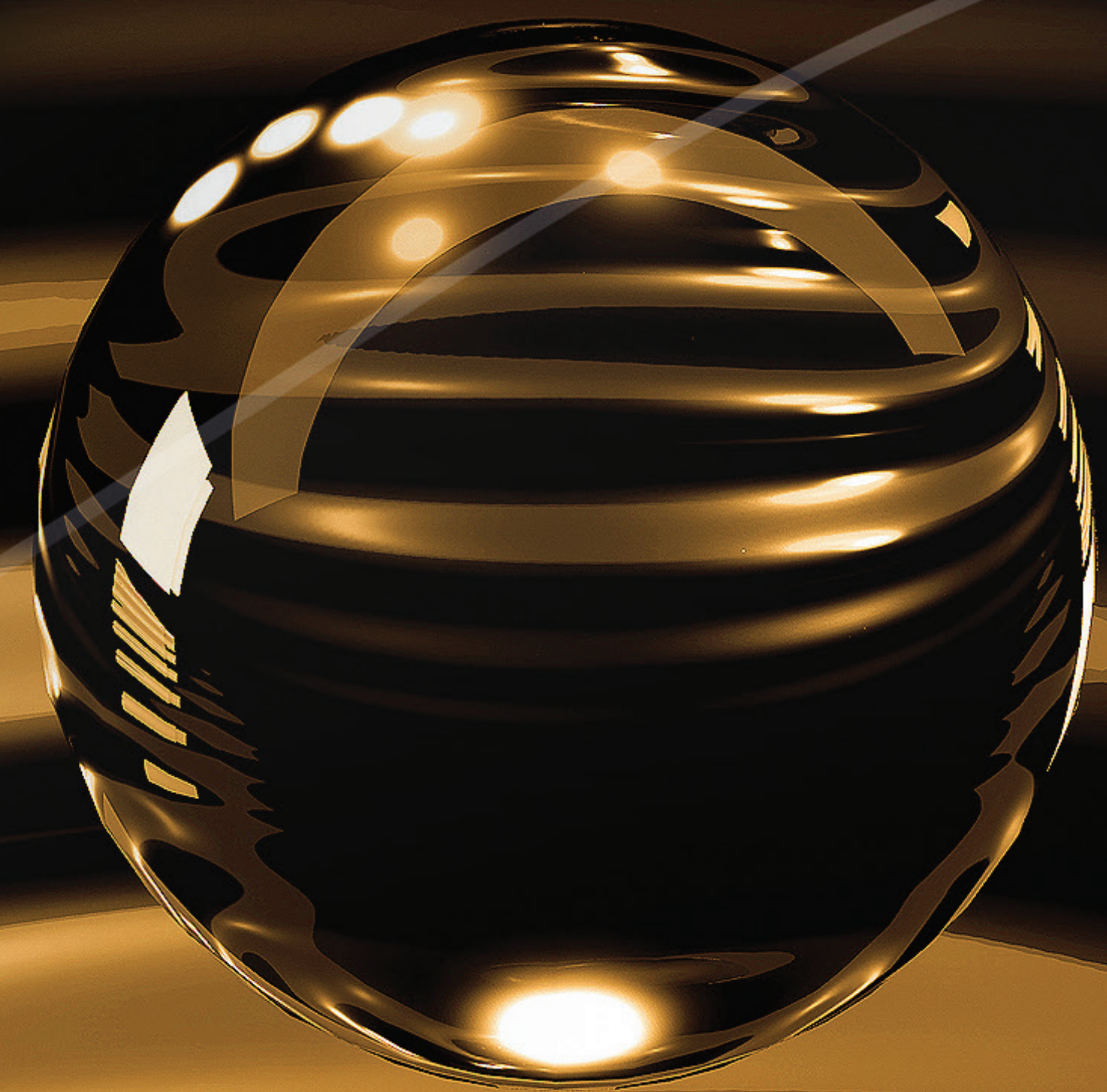
WHAT DOES EXO RNA™ HAVE TO DO WITH AUTOIMMUNE DISEASE?

Autoimmune diseases are on the rise, and over 50 million Americans suffer from them, and that number is increasing every year. Autoimmune diseases are caused by self-immune responses to autoantigens, which damage body tissue and severely affect the patient's quality of life. A wide range of preclinical studies, as well as a limited number of human clinical trials on the immunomodulatory potential of mesenchymal stem cells, have not only shown promising safety and efficacy profiles but have also revealed changes in T-reg expansion.

***Cell-to-Cell paracrine signaling, production of Neutrophil Growth Factors, and induction of extracellular vesicles (Exosomes) have emerged as possible mechanisms by which MSCs produce an immune-modulatory milieu for T-reg expansion.**

+
SOURCED FROM
MESENCHYMAL STEM CELLS
(MSCs)

+
REGULATORY
T-CELLS (T-REG)



THE BIOLOGIC ADVANTAGE

Biologics are transforming medicine and is the fastest-growing sector in the pharmaceutical industry, with total revenues reaching up to \$163 billion. Biologics provide safe solutions in many areas of unmet medical need, and their growth will continue, especially in regenerative therapy. The efficacy and safety of these products and their ability to treat previously untreatable diseases are the single most significant influencing factor in the growth of this market.

Sourced from Mesenchymal Stem Cells (MSCs), EXO RNA™ offers superior regenerative benefits. Preclinical studies indicate that the naturally occurring proteins, messenger RNA, and microRNA within MSC Exosomes improve the function of aging, injured or diseased cells, tissue, and organs.

As an ideal vehicle for delivery, Mesenchymal Stem Cells (MSCs), Exosomes can reach cells in parts of the body that many drugs cannot and have the ability to cross the blood-brain barrier.

exo
RNA

Key Advantage:

As an ideal vehicle for delivery, Mesenchymal Stem Cells (MSCs) exosomes can reach cells in parts of the body that many drugs cannot and have the ability to cross the blood-brain barrier.





WHAT IS EXO RNA™ ?

EXO RNA™ contains nano-sized extracellular vesicles, ranging 30-100 nanometers in size, secreted from the membranes of MSCs (Mesenchymal Stem Cells). They consist of lipids, proteins, nucleic acids and are considered acellular. Studies have confirmed these extracellular vesicles preserve immunosuppressant phenotypes, are excellent anti-inflammatories, and contain over 300 growth factors responsible for wound repair, tissue, and cartilage regeneration.

Can EXO RNA™ Benefit Neurodegenerative Diseases?

Research has shown that exosomes can penetrate the blood-brain barrier and stimulate neuronal differentiation, neuronal growth, and suppress inflammatory processes within the brain tissue. These extracellular vesicles provide a basic mode of cell-to-cell communication by delivering proteins, lipids, and RNA to target cells. EV's are found associated with neurodegenerative diseases, which are characterized by progressive degeneration of neurons.

REGENERATIVE
GROWTH FACTORS

ADVANTAGES OF EXO RNA™

- Can Cross the blood-brain barrier
- Anti-inflammatory
- No in office harvesting procedure is required
- No spinning in centrifuge
- Off the shelf use
- Stored in a standard freezer -20c
- Acellular
- Delivers miRNA and mRNA
- Easily controlled dosage

SOME KEY GROWTH FACTORS PRESENT IN EXO RNA™

(GROWTH FACTOR: protein that signals cells to grow or differentiate.)

- BDNF Brain-Derived Neurotrophic Factor: Supports survival of neurons and encourage growth
- HGF Hepatocyte Growth Factor: Involved in organ regeneration and wound healing
- PDGF-BB Platelet Derived Growth Factor Sub-Unit B: Growth factor used to stimulate healing in soft and hard tissues
- VEGF Vascular Endothelial Growth Factor: A protein involved in both angiogenesis and vasculogenesis. Its most important role is to help in the creation of new blood vessels following an injury.
- GDF-15 Growth Differentiation Factor 15: Regulates inflammation, apoptosis, cell repair, and growth
- TGFβ3 Transforming Growth Factor Beta 3: Most important anti-inflammatory protein; converts inflammatory T-cells into anti-inflammatory regulatory T-cells
- GDNF Glial-Derived Neurotrophic Factor - Promotes survival of neurons
- MIP-1 Macrophage Inflammatory Protein 1 : Also known as CC1-4, recruits mononuclear cells to the treatment area





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