

XOLIFE™

Enhancing cell-to-cell communication

Discovered more than 30 years ago, Exosomes were considered debris whose purpose was to discard unwanted cellular components. Over the past few years, evidence has begun to accumulate that these secreted vesicles also act as messengers conveying information to distant tissues and causing physiological changes.

Exosomes are 100 nM cell-derived lipid vesicles that are secreted by most cell types, including MSCs, and are an essential part of intercellular communication. These vesicles allow cells like MSCs to share information with targeted tissues and protect the "information" from catabolic factors, thereby, enhancing tissue signaling. While their main role is to communicate with cells, they are also responsible for the spread of proteins (GFs), lipids, messenger RNA, and micro RNA.

Exosomes are known to enter the cytoplasm of a targeted cell and cause new growth factor expression in older cells by transcribing the resident mRNA immediately. These nucleic acids are the basis for transcription of thousands of new growth factors and growth factor receptors.

The RNA Difference

Recent studies of exosomes have discovered MessengerRNA (mRNA) and MicroRNA (miRNA) inside. These micro-components aid in cell-to-cell communication, along with the transportation and capture of any cargo information it is carrying.

mRNA is a signaling molecule that is translated into protein in the targeted recipient cell ₂

miRNA is double-stranded RNA fragments that can regulate the amount of information carried ₃

These RNAs have been shown to have functional effects in cells. Exosome RNA content varies dramatically depending on the type of original cell that released them.

1. 5. H. Valadi et al, "Exosome-mediated transfer of mRNAs and microRNAs is a novel mechanism of genetic exchange between cells," Nat Cell Biol, 9:654-59, 2007.
2. <https://www.bioinformant.com/what-are-exosomes-the-exosome-revolution-is-here/>
3. <https://bmcbiol.biomedcentral.com/track/pdf/10.1186/s12915-016-0268-z>

Maximize Restoration with XoLife™

This patient was treated topically with XoLife™ after 2nd degree burns to his face. XoLife™ significantly improved healing time over 7 days with daily application. 60 days after the burn, the patient's skin demonstrated a more youthful texture, glow, and pore size, while leaving no hyper-pigmentation.



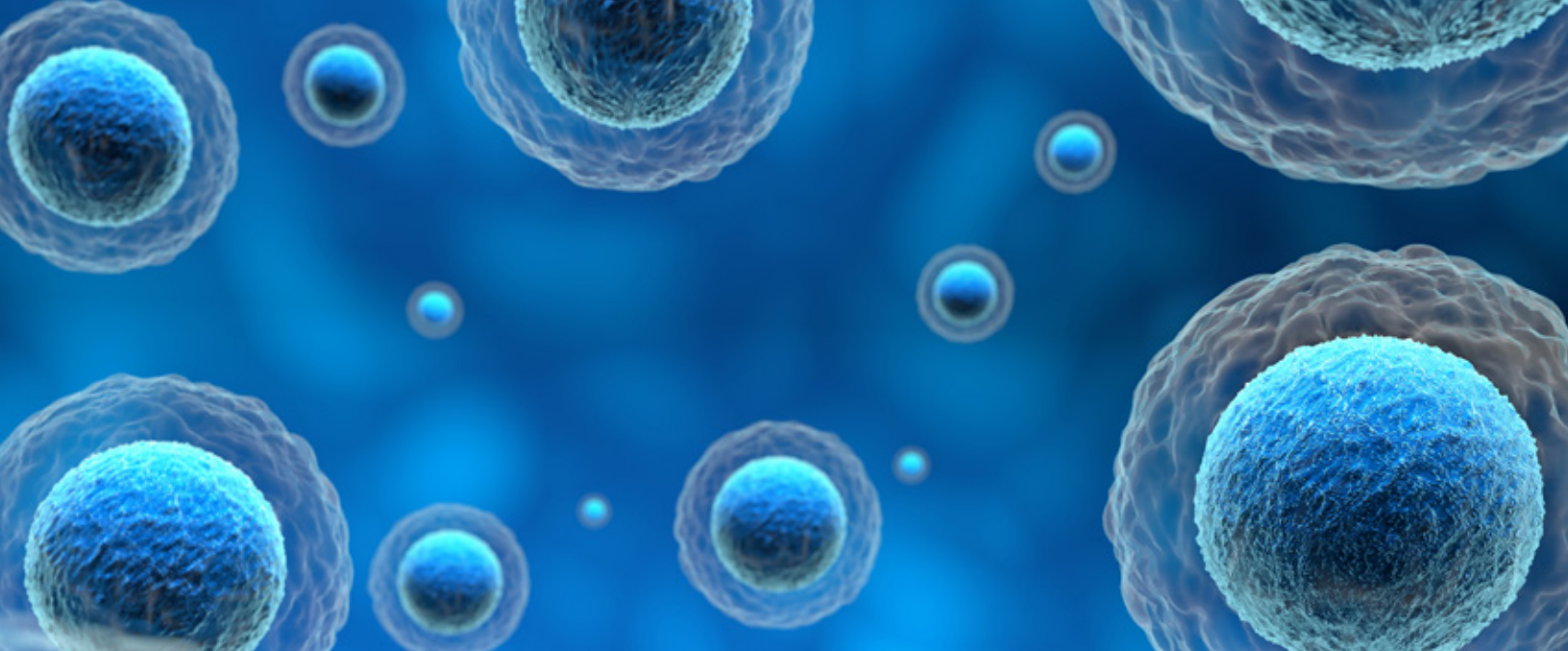
Day 0



Day 7



Day 60



XOLIFE™

This neo-natal cell derived growth factor solution for topical use is the newest addition to the regenerative space. Adding Exosomes to your regenerative services is easy without the procedure and harvesting time seen with most autologous cell therapies. Learn more about this exciting regenerative revolution through these experts highlighted below or talk to a CAREstream Representative today.

FURTHER READING

"The identification of exosomes as the main agent mediating the therapeutic efficacy of MSCs provides a rationale for refining MSC-based therapy from a cellular to a non-cellular one."

Yeo RWY, Chai R, Hian K, Kiang S. Exosome: A Novel and Safer Therapeutic Refinement of Mesenchymal Stem Cell. Exosomes and Microvesicles. 2013:1

"...in vitro experiments showed that the mRNA could be translated into proteins in target cells, providing the first demonstration of genetic information transfer by exosomes. This remarkable discovery not only indicates a new form of intercellular communication, but suggests that exosomes could perhaps behave similarly to viruses, in the sense that they bring with them genetic material that is translated to proteins in the cells they "infect."

H. Valadi et al., "Exosome-mediated transfer of mRNAs and microRNAs is a novel mechanism of genetic exchange between cells." Nat Cell Biol, 9:654-59, 2007

"MSC-derived exosomes exhibit anti-inflammatory properties and restore metabolic ability to injured tissue."

Lee C, Mitsialis SA, Aslam M, Vitali SH, Vergadi E, et al. Exosomes mediate the cytoprotective action of mesenchymal stromal cells on hypoxia-induced pulmonary hypertension. Circulation. 2012;126:2601-11

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