



# ENHANCE YOUR CELL-TO-CELL COMMUNICATION

Talk to your doctor about  
talking to your cells.

Introducing Exosomes, the  
next advancement in cell  
communication & regeneration.

## FIND OUT MORE

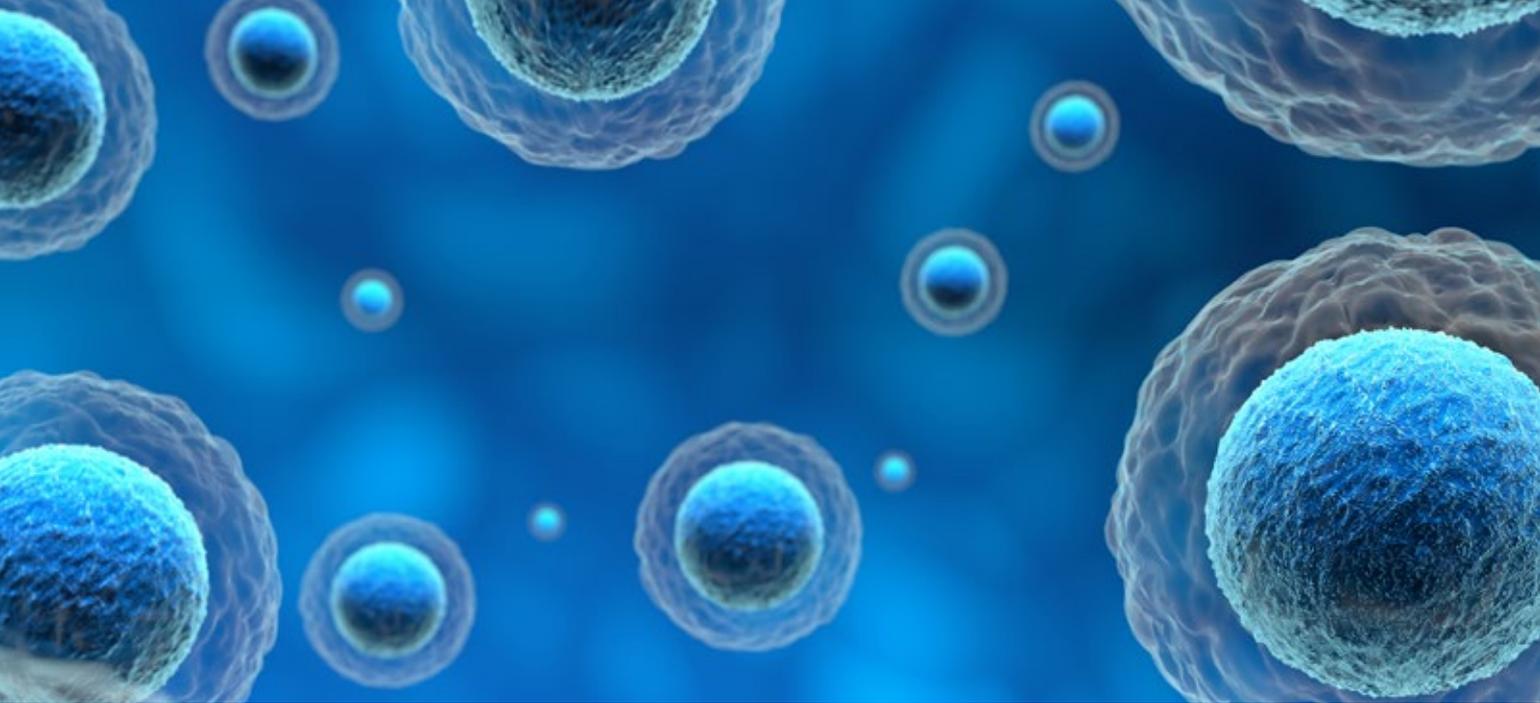
Talk with your doctor today to learn more about  
the power of Exosomes.

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 CATALYST™



## WHAT IS AN EXOSOME?

Exosomes were first discovered over 30 years ago as a vesicle secreted by most cell types already in the body. Evidence has accumulated over the past few years indicating these secreted vesicles are so small in size they are formed inside the cell and act as messengers, actually carrying and transferring information to neighboring or distant cells much like a delivery truck.

## HOW DO EXOSOMES WORK?

Different cell types release exosomes that haul specific proteins, lipids and growth factor details to targeted cells in the body. Exosomes securely carry this information and are guided, similar to GPS, by exterior molecules that target the recipient cell. Although this information originates from a person's cell, there is no DNA transferred within the exosome payload between bodies or cells.

Once united, the targeted cell absorbs the exosome, along with its cargo instructions, to begin its physiological transformation.



Day 0

Day 7

Day 60

*After a 2nd degree burn to his face, this patient received daily topical applications of Exosomes over 7 days. Over time, the patient's skin demonstrated a more youthful texture, glow, and pore size, while leaving no hyper-pigmentation.*

## MESENCHYMAL STEM CELLS: the modern-day fountain of youth

Mesenchymal stem cells (MSCs) are one of the most easily accessible primary cells and can be easily collected from a large variety of tissues. The ease of isolation and specialized biological functions of MSCs have made them a popular choice for cell therapy research. Their ability to differentiate has characterized them as seeds with therapeutic properties to reconstruct, regenerate and repair. <sup>[1]</sup>

MSCs can produce high amounts of exosomes, therefore, passing along their therapeutic attributes. <sup>[2]</sup> Because exosomes reflect properties of their source cells, younger MSCs produce seven times more exosomes than older, adult MSCs. <sup>[3]</sup>

[1] Zhang, B.; Li, X. Exosomes Derived from Mesenchymal Stem Cells. *Int. J. Mol. Sci.* 2014, 15, 4142-4157

[2] Yeo, R.W.; Lai, R.C.; Zhang, B.; Tan, S.S.; Yin, Y.; Teh, B.J.; Lim, S.K. Mesenchymal stem cell: An efficient mass producer of exosomes for drug delivery. *Adv. Drug Deliv. Rev.* 2013, 3, 336-341.

[3] Chen, T.S.; Yeo, R.W.; Arslan, F.; Yin, Y.; Tan, S.S. (2013) Efficiency of exosome production correlates inversely with the developmental maturity of MSC Donor. *J Stem Cell Res Ther* 3: 145.