



Tabriz University of
Medical Sciences

ویژگیهای سلول های بنیادی مزانشیمی و پرایمینگ آنها جهت استخراج سکرتوم و اگزوزوم

ارایه:

دکتر ابوالفضل برزگری

هیات علمی مرکز جامع سلو های بنیادی و پزشکی بازساختی

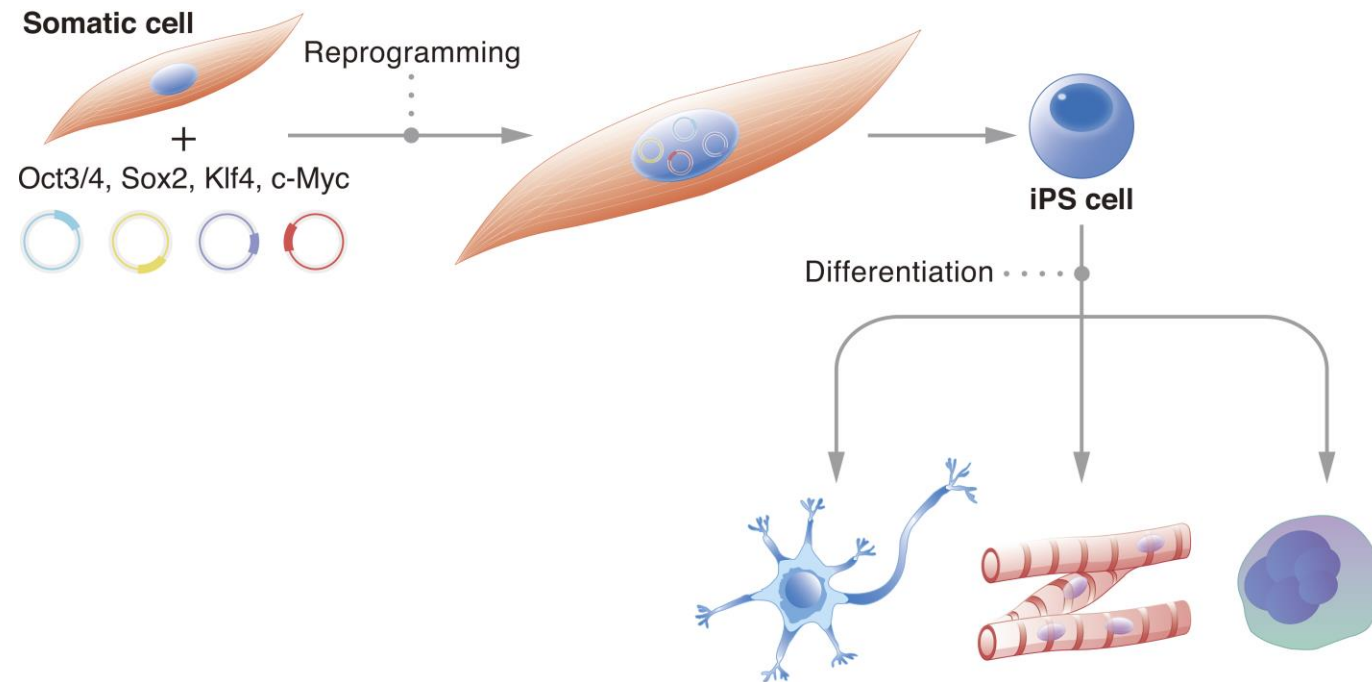
Regenerative medicine

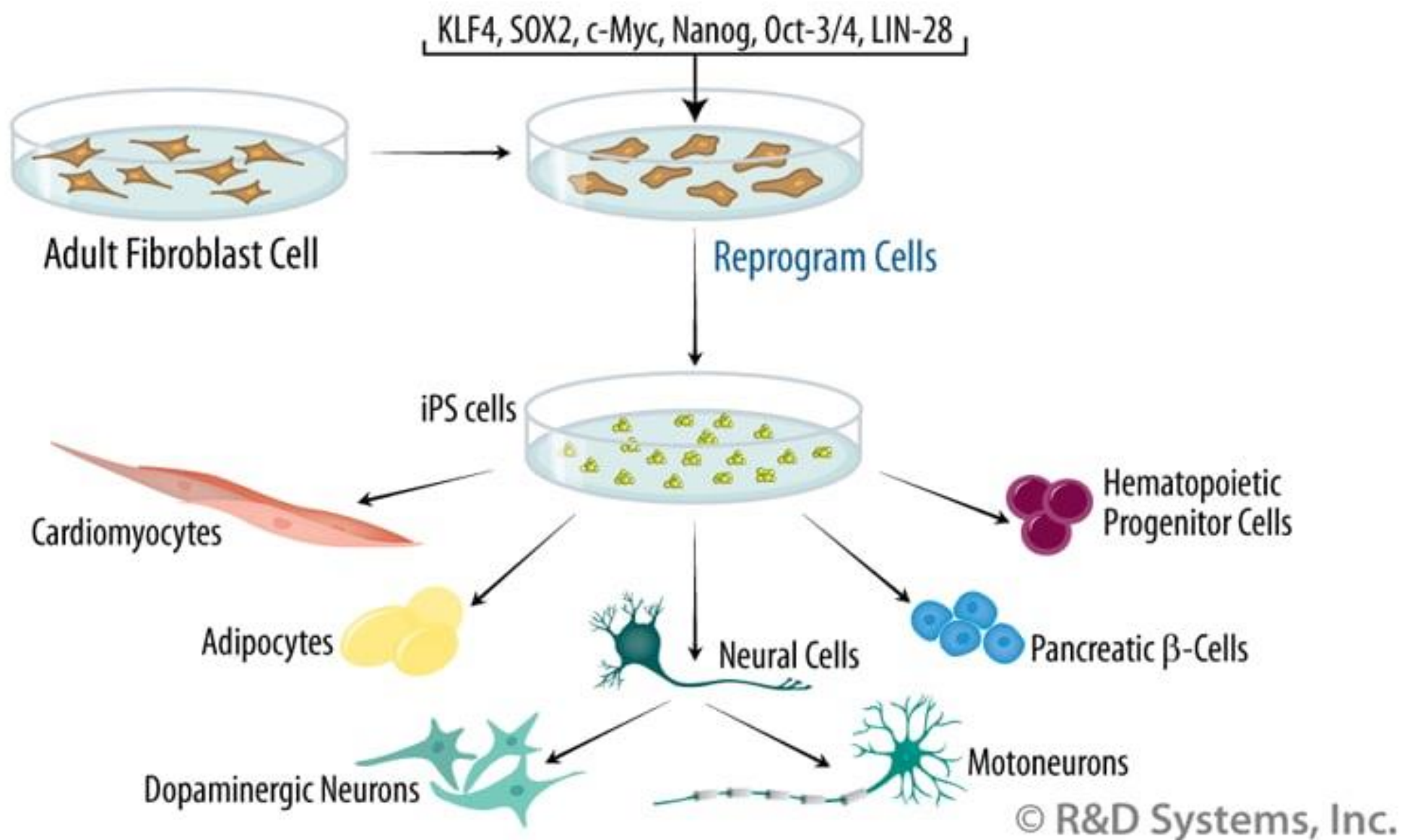
- ✓ Regenerative medicine is the branch of medicine that focused on developing and applying new treatments to heal tissues and organs and restore function lost due to aging, disease, damage or defects.
- ✓ *The human body has the natural ability to heal itself in many ways.*



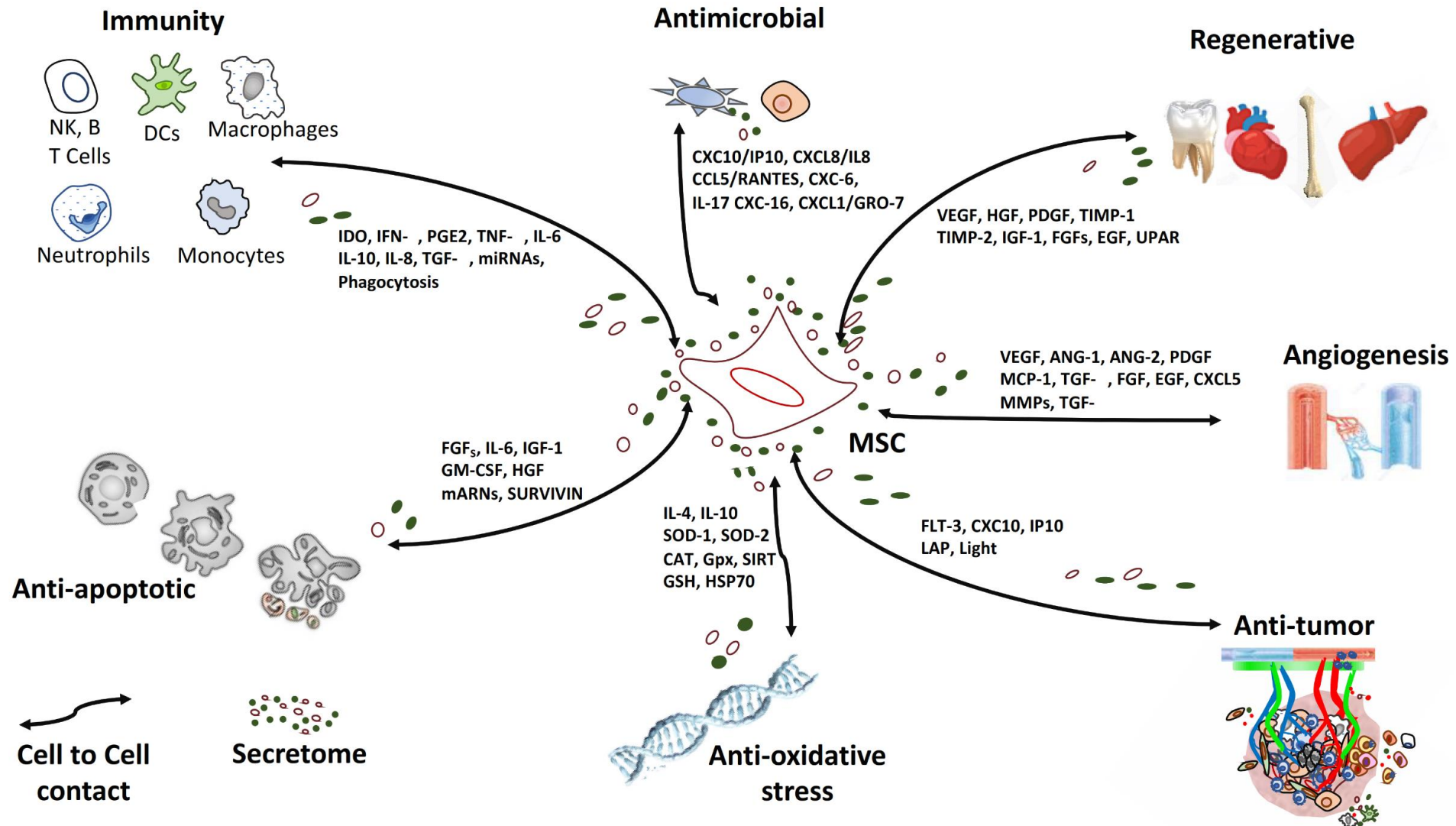


Nobel Prize winner
Sir John Gurdon and
Shinya Yamanaka

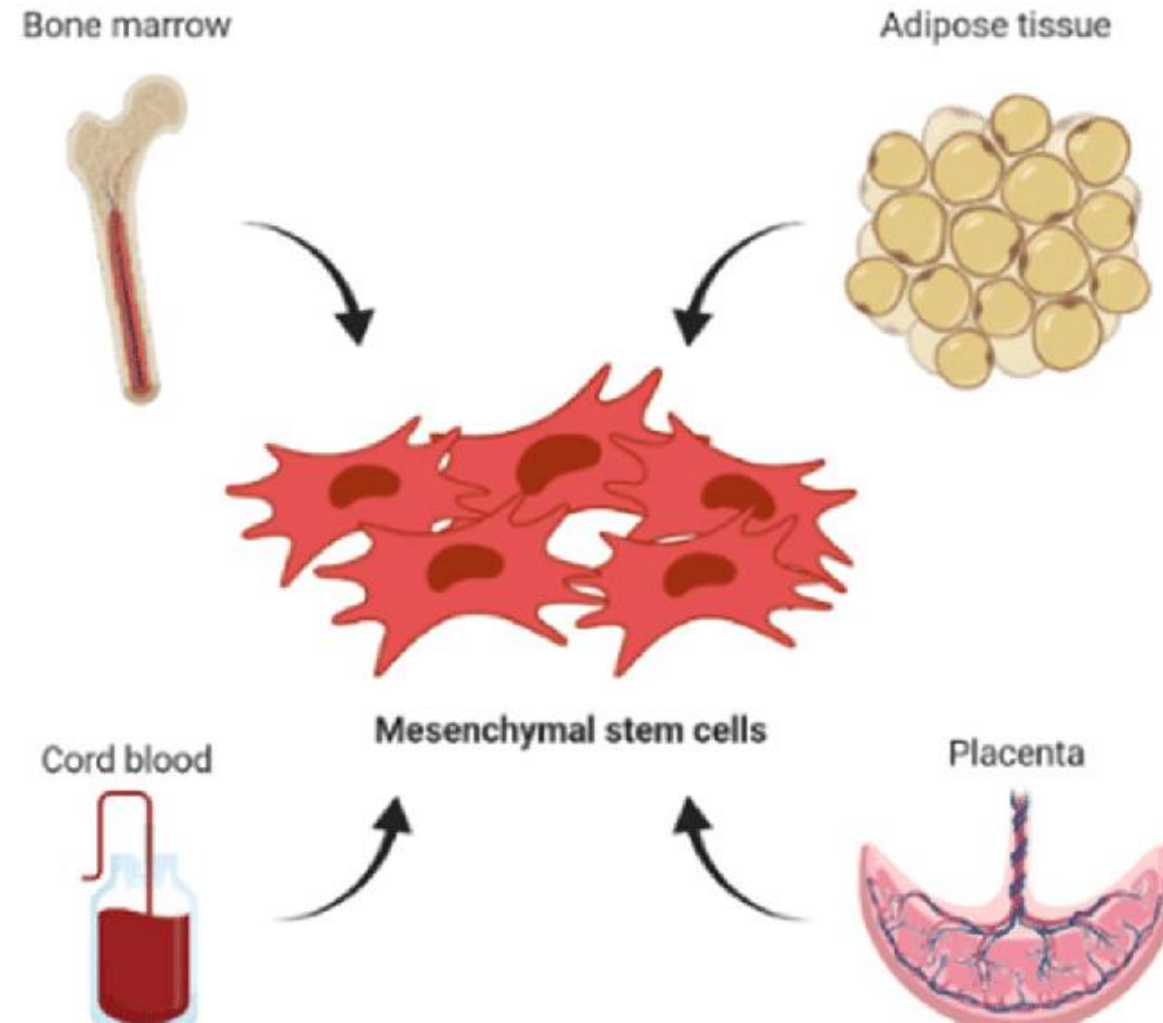




Mesenchymal Stem Cells as a Cornerstone in a Galaxy of Intercellular Signals: Basis for a New Era of Medicine

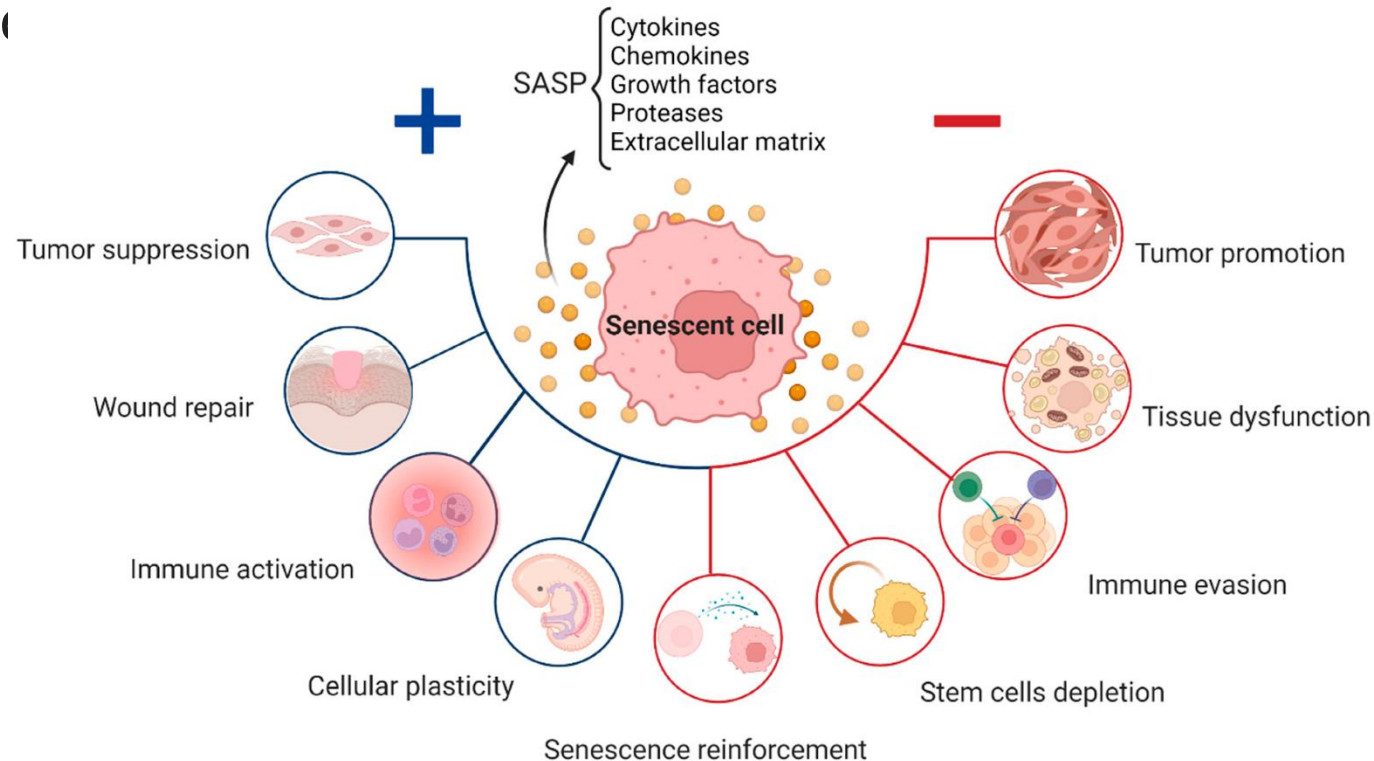


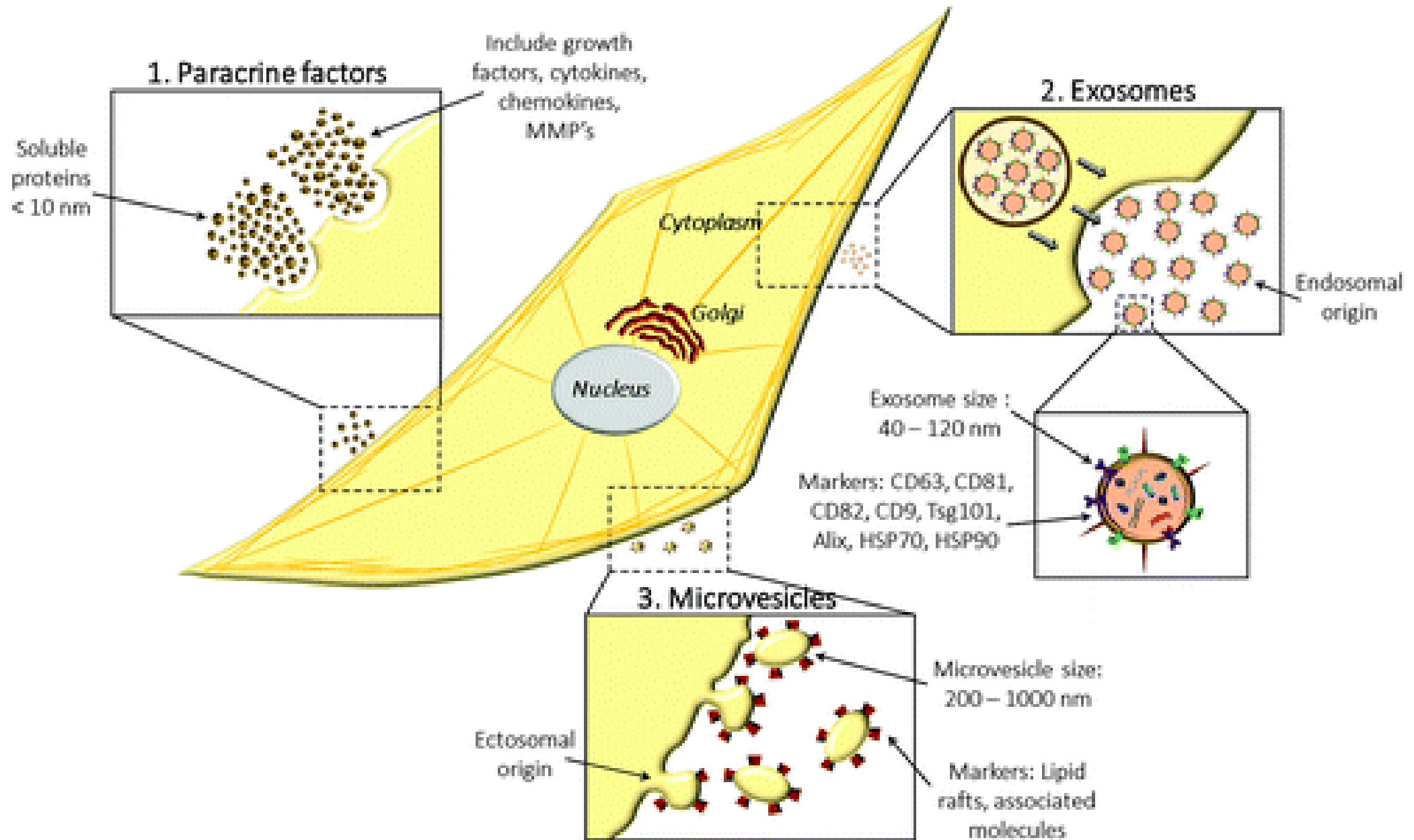
The main source of MSCs

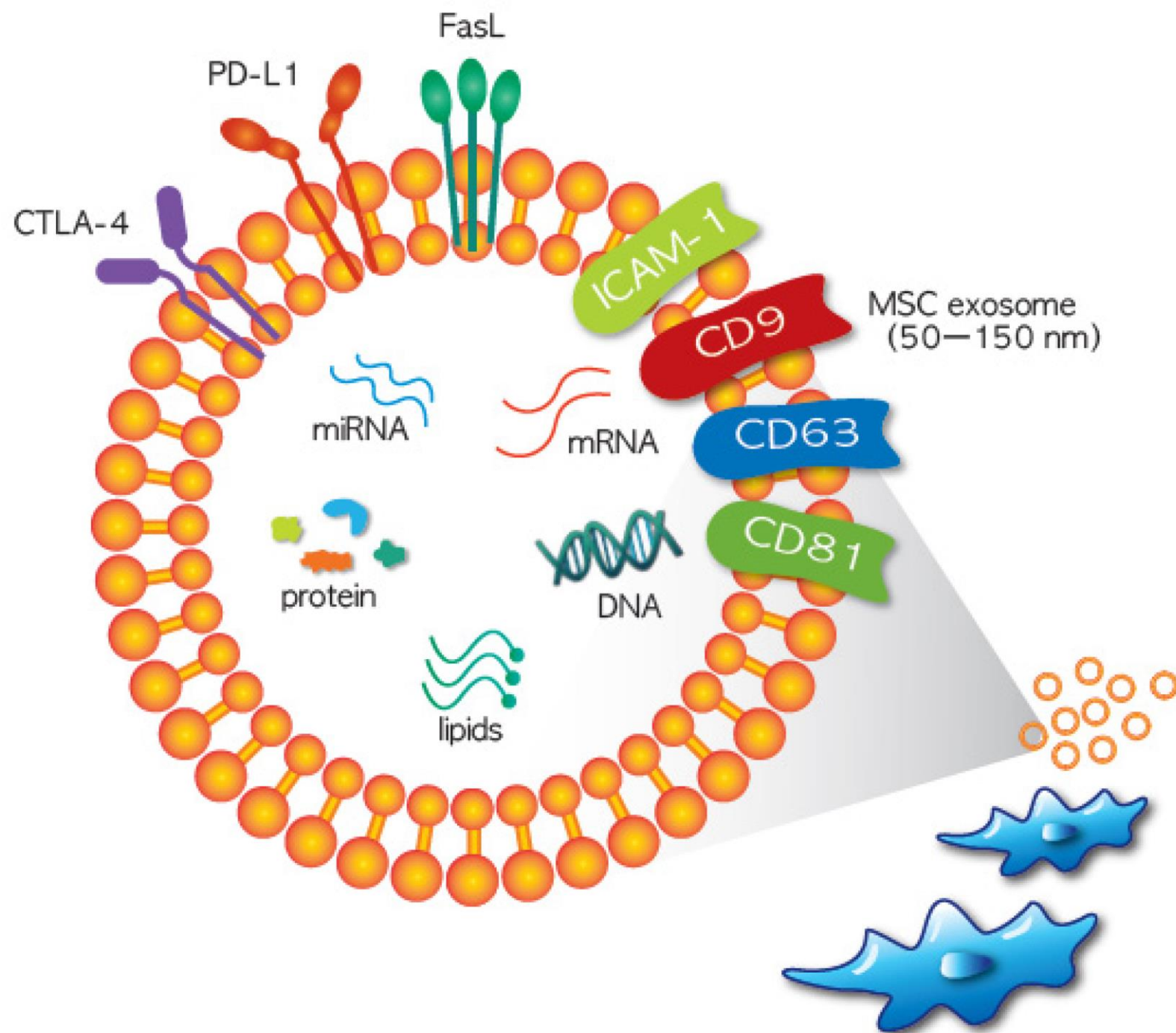


Senescence-associated secretory phenotype (SASP)
'senescence-messaging secretome' or SMS

- I. Rapamycin and its analogs (so-called 'rapalogs') suppress the SASP by inhibiting mTOR and appear to extend healthspan.
- II. The antidiabetic drug metformin, which, among other activities, inhibits the SASP, alleviates several age-related conditions and chronic diseases.





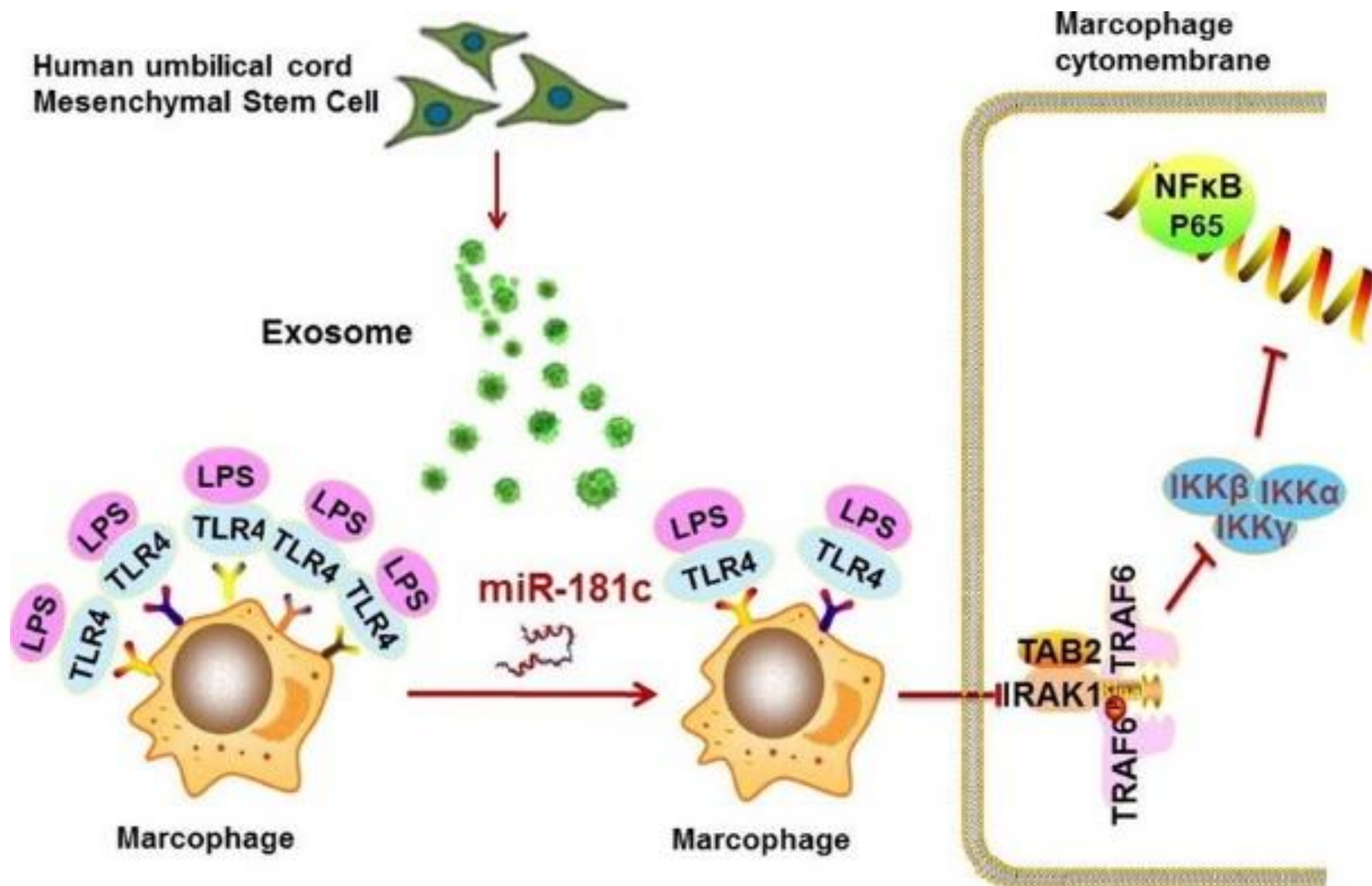


MSC Exosome Contents

Growth factors
Cytokines
Lipids
mRNAs
miRNAs
mtRNAs

Role of MSC Exosomes

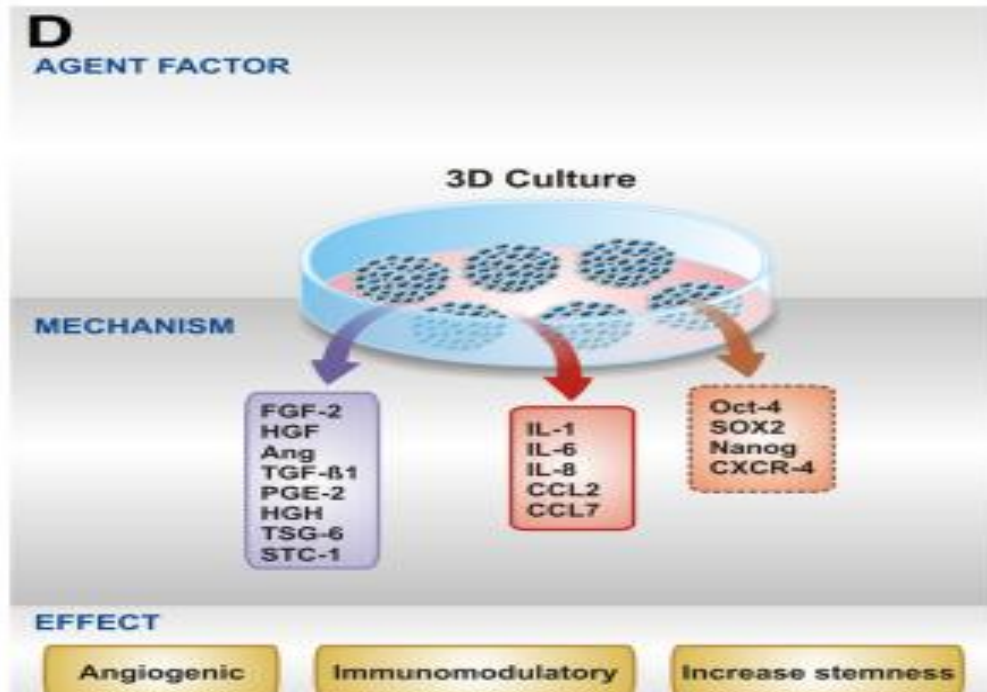
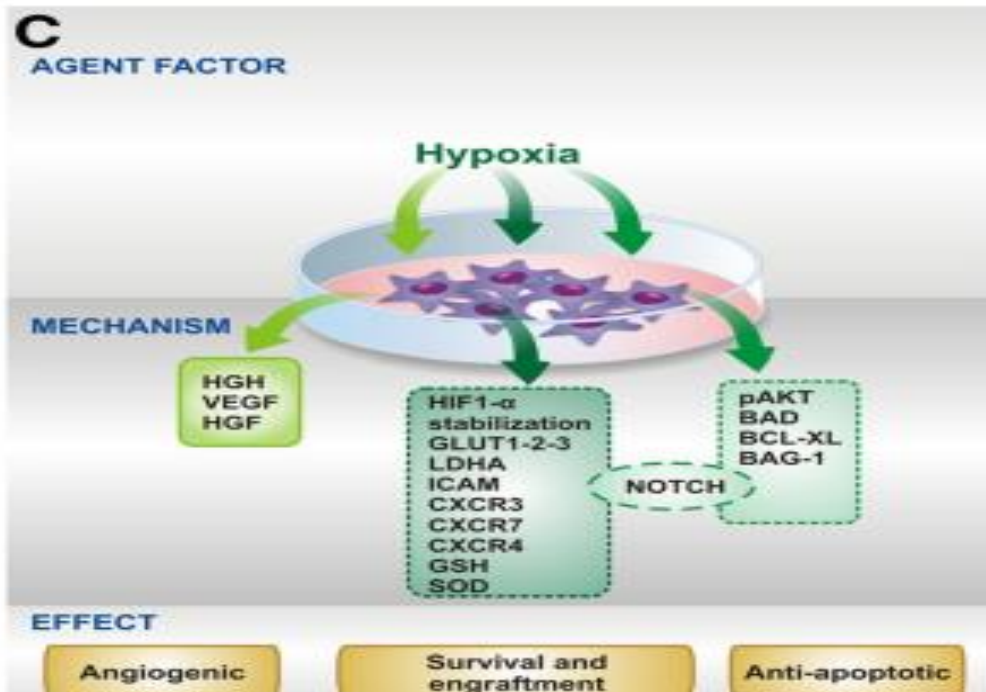
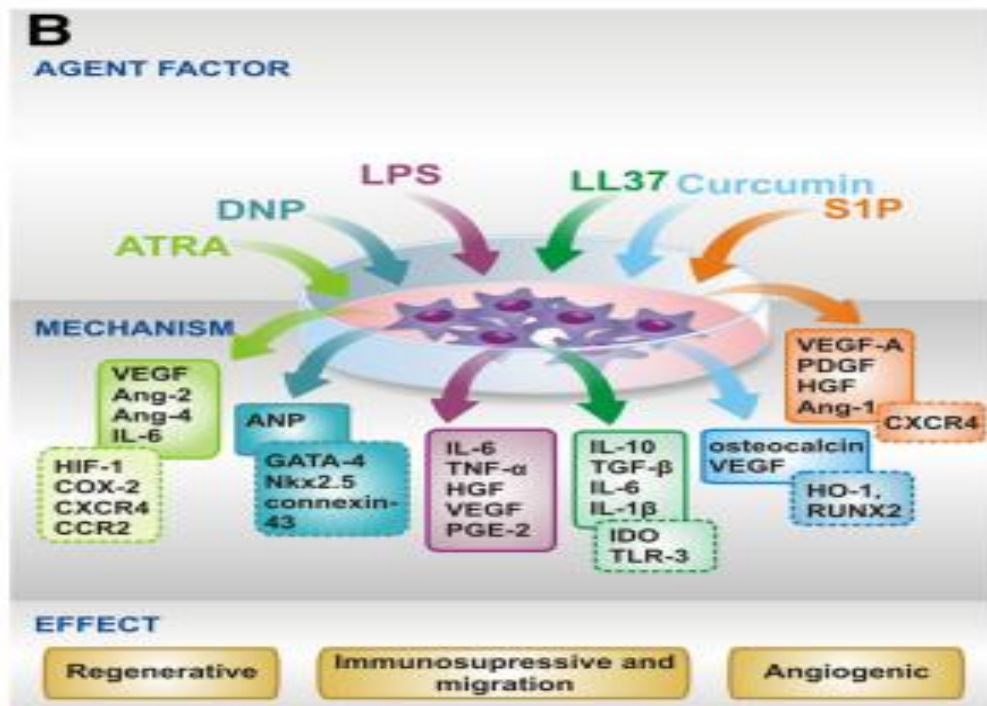
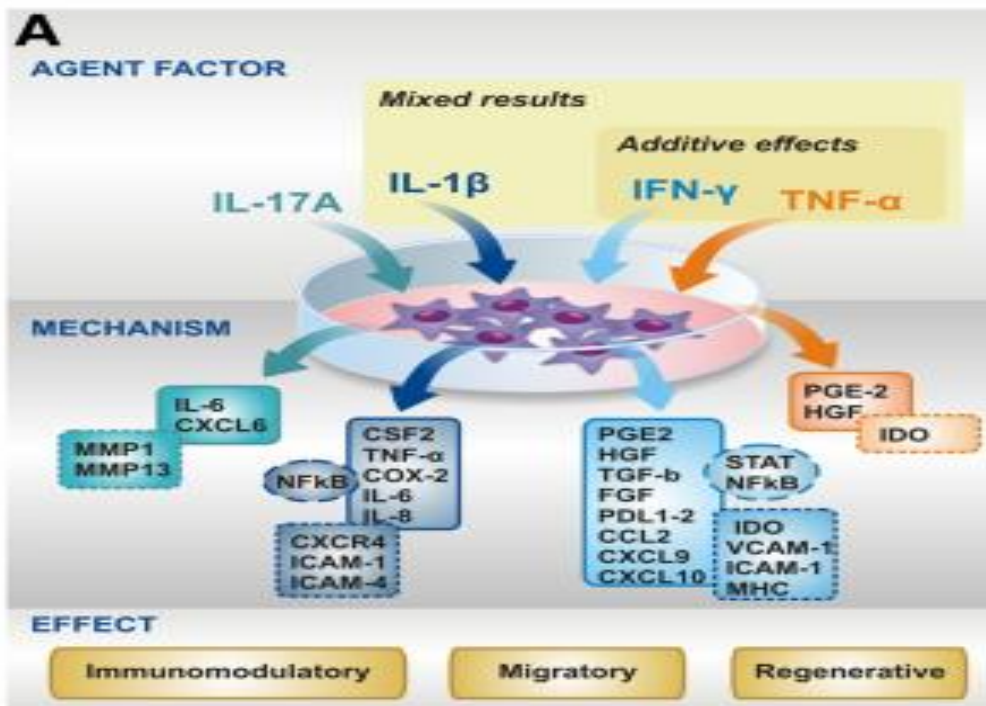
Cell migration ↑
Matrix synthesis ↑
Anti-apoptosis ↑
Immunomodulation ↑
Inflammation ↓
Collagen deposition ↓



AMNIOTIC STEM CELL BANKS

- Biocell center, European biotechnology company is the first firm to harvest and preserve amniotic stem cells
- Biocell Center captures the stem cells from amniotic fluid if the family requests and pays for the preservation of the stem cells
- Amniotic fluid withdrawn during amniocentesis is sent to the Biocell Center laboratory. The stem cells are frozen in liquid nitrogen and preserved in the company's state-of-the-art cryo-bank.





Although MSC-secretome efficacy has been widely established in numerous preclinical models, the development of large-scale GMP-grade secretome-based pharmaceuticals is still missing.



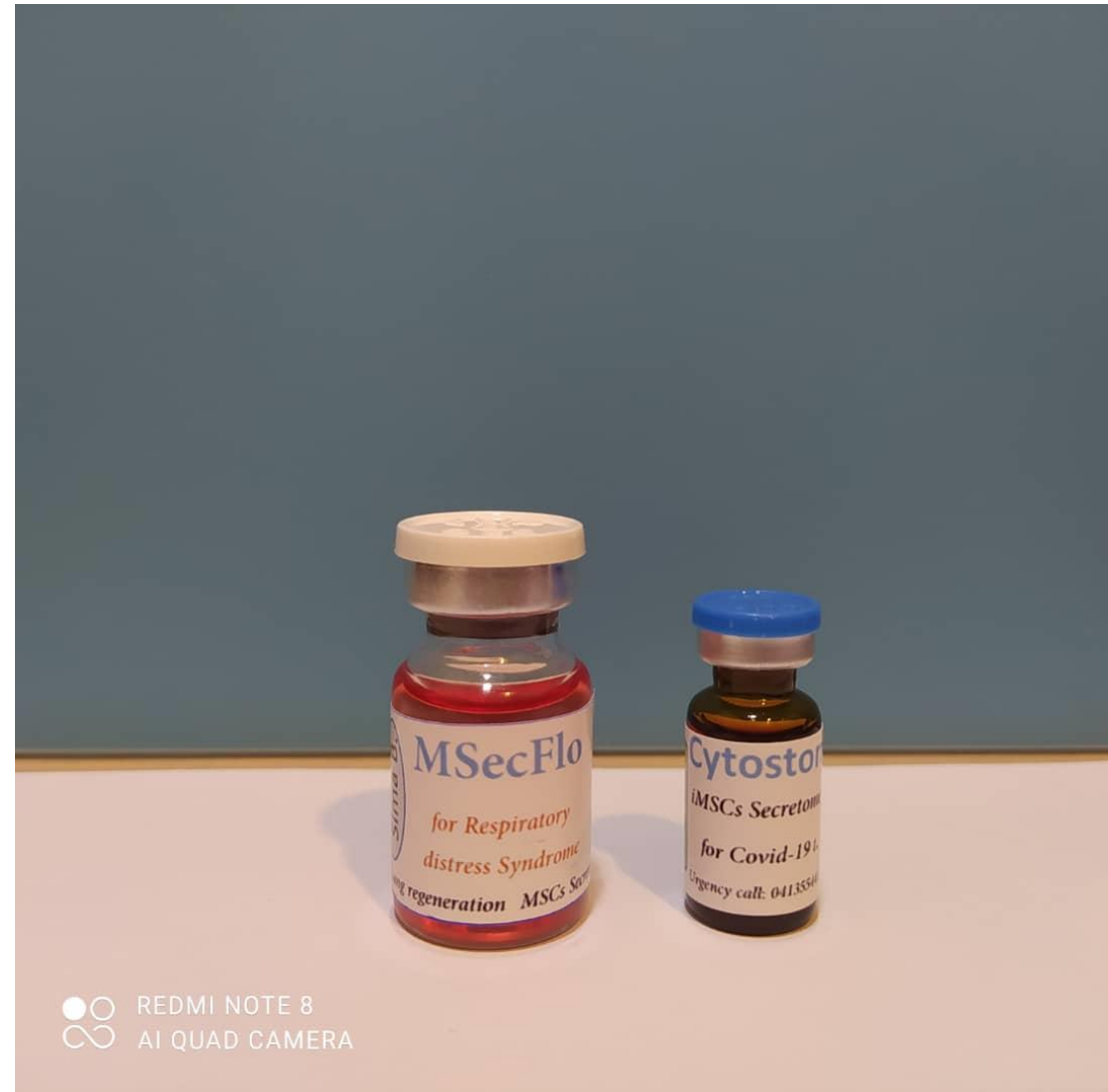
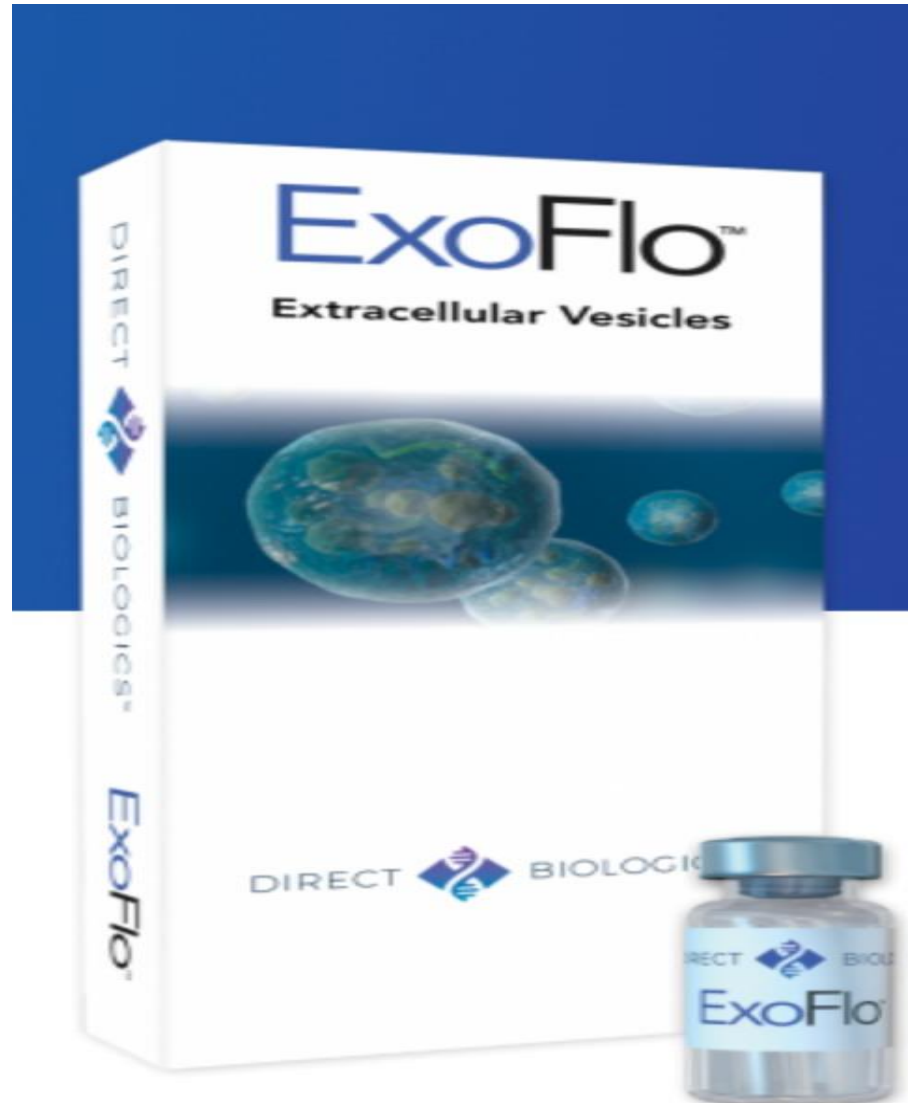
The use of **MSC-secretome** as a cell-free therapy is being studied in a number of disorders

- It is also important to establish the optimal milking timing, transport, storage, and delivery protocols of MSC secretion as MSC secretome is a highly dynamic product .
- Furthermore, dosage amount, the optimum volume of injection, the route of administration (intramuscular, intravenous, or subcutaneous, etc.), and administration frequency are unknown for the different diseases.
- An experimental good manufacturing protocol (GMP) was planned to transform MSC-secretome/lysate into a pharmaceutical product, combining freeze-drying and ultrafiltration procedures

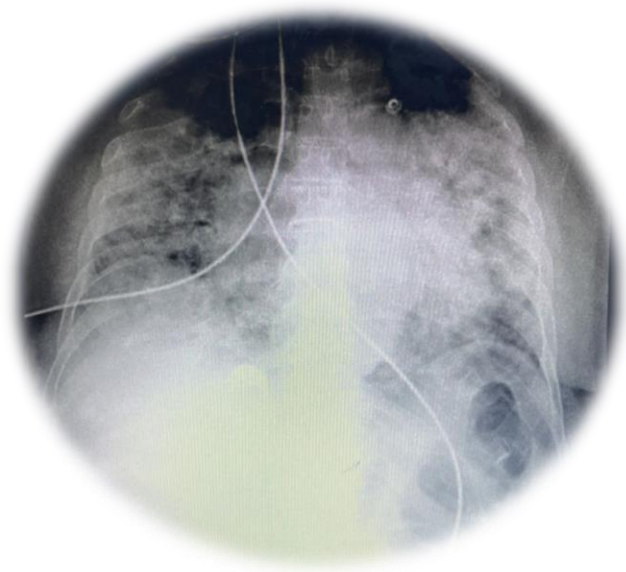
Mesenchymal stem cell-based therapy for burn wound



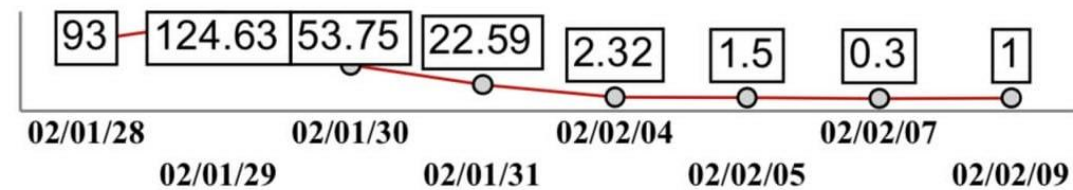
Immunomodulatory, anti-inflammatory, and regenerative properties of MSCs' Secretome



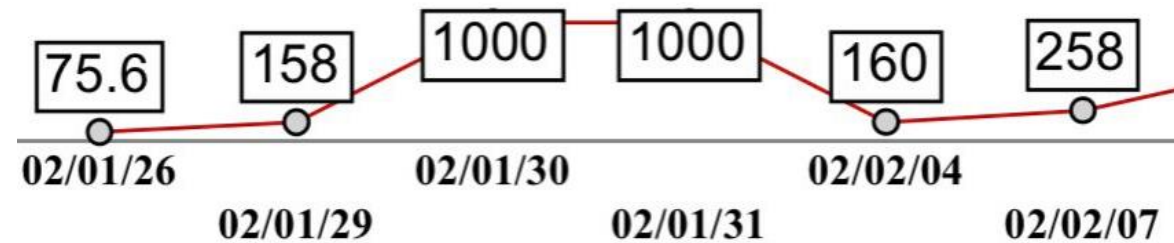




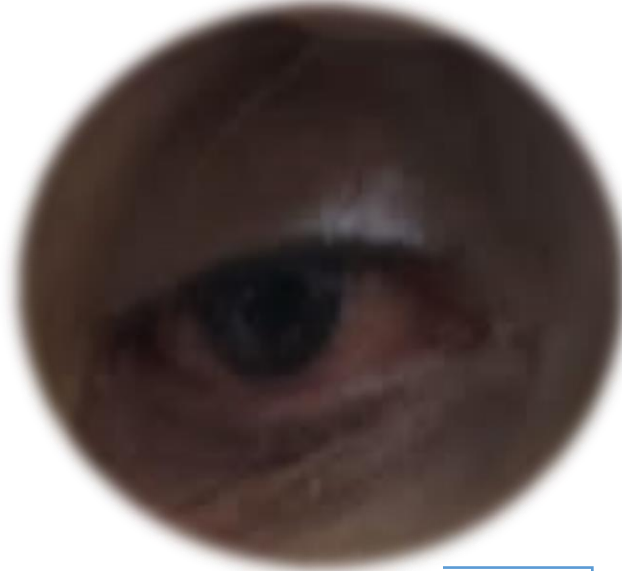
C-Reactive Protein



IL 6 (Interleukin 6)



The immunosuppressive and regeneration activity of Secretome in graft versus host disease (GvHD)



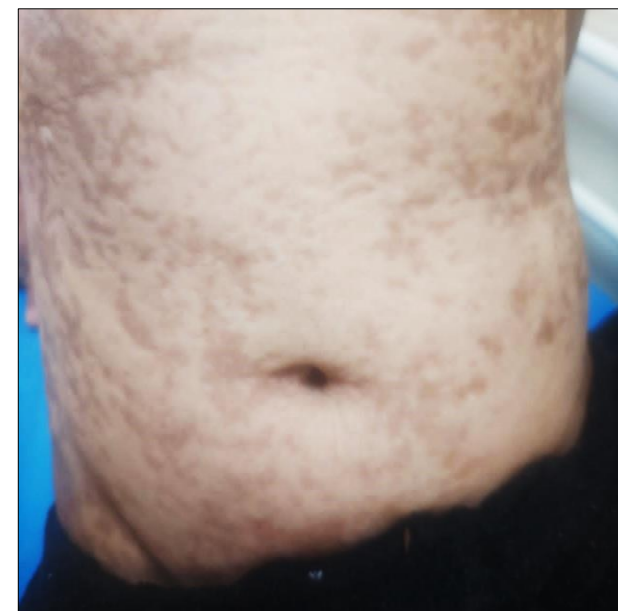
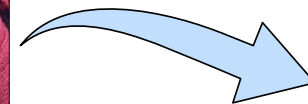
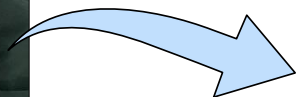


Before



After







Thanks for Your Attention

"We can't solve problems by using the same kind of thinking we used when we created them."

Albert Einstein