

Different Stem Cell Tissue Sources being Offered for Orthopedic Treatments

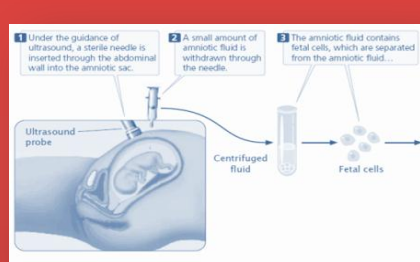
What cell sources are most commonly used in orthopedics?

Bone marrow nucleated cells, adipose stromal vascular fraction (SVF), adipose fat grafts, and amniotic fluid stem cells are the most common stem cell procedure types being used. A handful of sites are also offering cultured bone marrow or adipose mesenchymal stem cells.



Cord Blood

Isolated from the blood in an umbilical cord of a fetus.



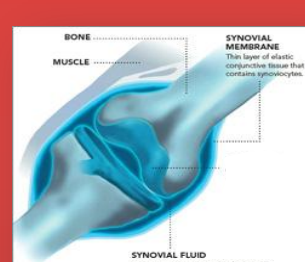
Amniotic

Cells taken from the fluid or membrane that surrounds a fetus.



Embryonic

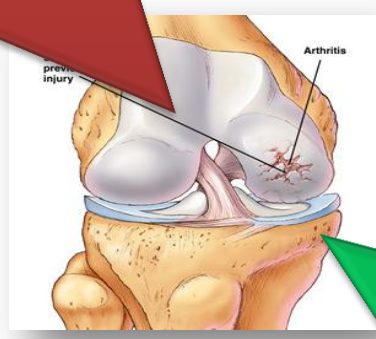
Cells taken from the developing embryo.



Synovial

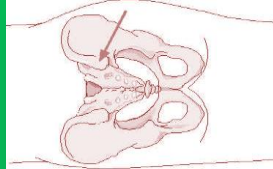
Cells isolated from the synovial fluid or membrane.

Someone Else's Stem Cells (Allogeneic)



Your Own Stem Cells (Autologous)

Bone Marrow Aspirate
Isolated from the liquid part of the bone marrow.



Adipose (Fatty Tissue)
Cells taken from fatty tissue.



Two Different Types of Bone Marrow Stem Cell Processes

Same Day

Advanced

Three Different Types of Fat Stem Cell Processes

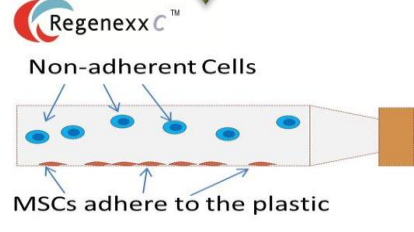
Same Day

Same Day

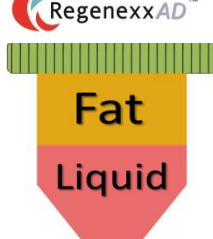
Advanced



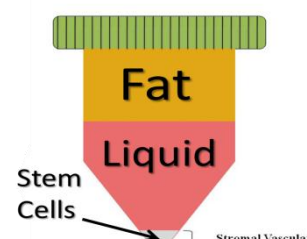
Bone Marrow Nucleated Cell Isolation
The stem cell fraction of bone marrow is isolated via a centrifuge and re-injected the same day.



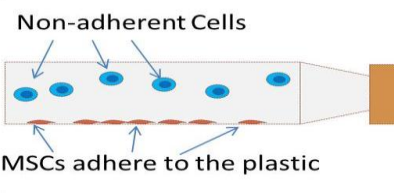
Bone Marrow Mesenchymal Stem Cell Culture
The stem cells themselves are isolated and cultured to greater numbers over a few weeks. This produces a "pure" population of stem cells which is different than the mix of cells produced by same day procedures.



Simple Adipose Graft
The fat is separated from the oil and liquid and the fat is injected (however the stem cells are still trapped in the fat and are not concentrated).



Stromal Vascular Fraction (SVF)
The fat is separated and then chemically digested to release the stem cell fraction, which is then concentrated.



Adipose Mesenchymal Stem Cell Culture
The stem cells are isolated and cultured to greater numbers over a few weeks. This produces a "pure" population of stem cells which is different than the mix of cells produced by same day procedures.



Tissue
No FDA Approval



Drug
Needs FDA Approval



Tissue
No FDA Approval



Drug
Needs FDA Approval



Drug
Needs FDA Approval

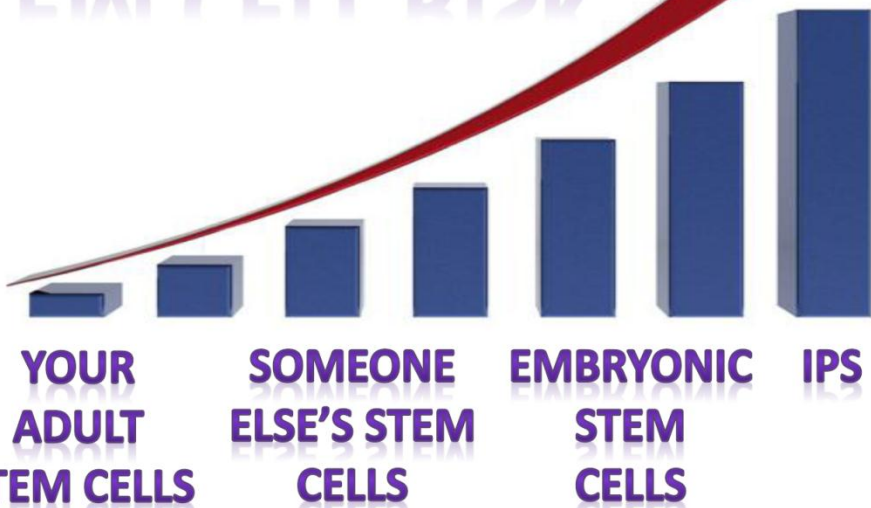


Current FDA Regulatory Status of Above

(Under Current Court Challenge)



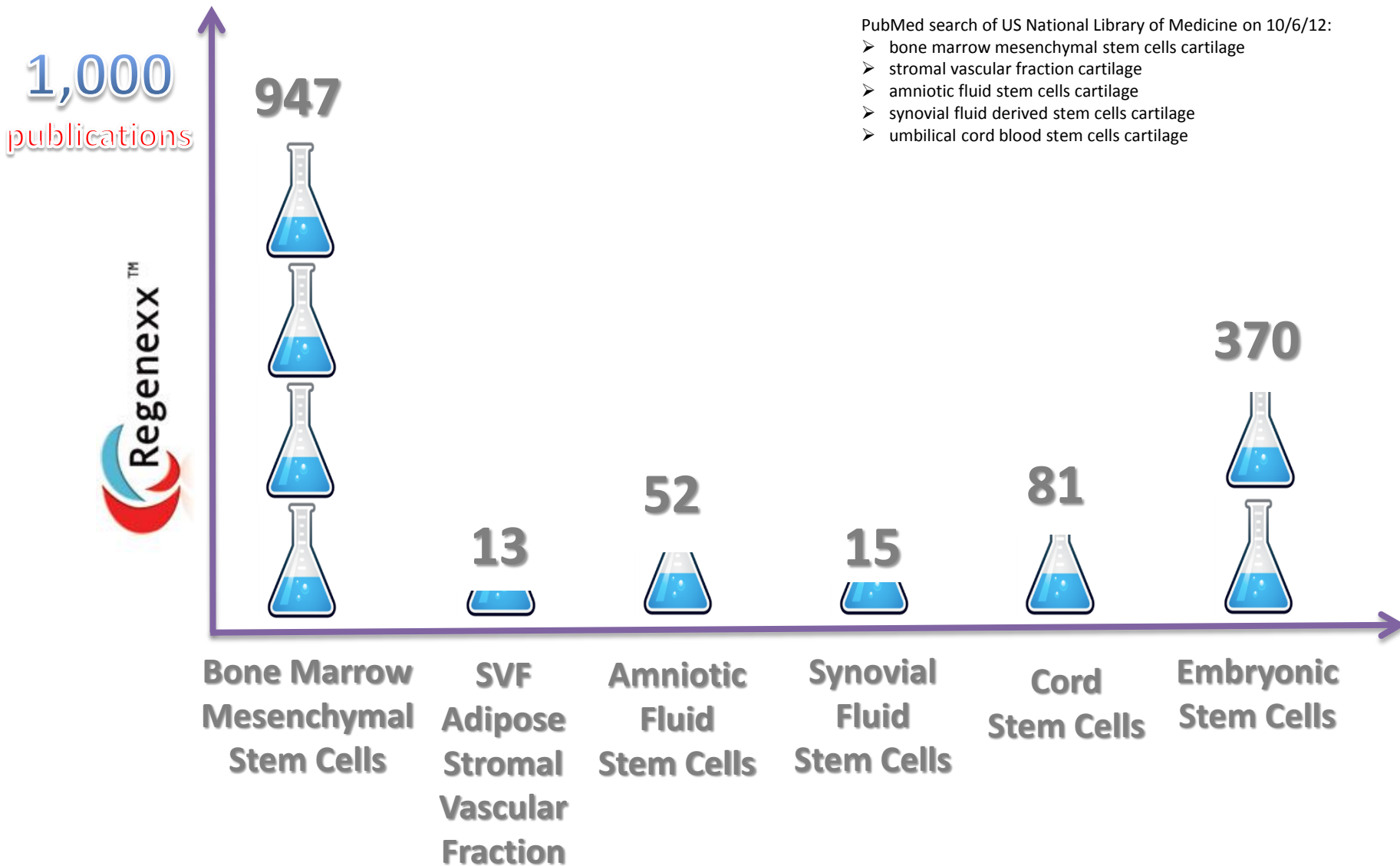
STEM CELL RISK



Stem Cell Risk

All things being equal, the risk of a stem cell therapy increases as the source changes. The safest cells are your own. Stem cells from others can carry the good and bad of their genetic material. Embryonic cells can form tumors.

How do various stem cell sources compare on published animal models of cartilage repair?



IN THE PUBLISHED RESEARCH OR PUBLISHED FDA TRIALS, HOW MANY PATIENTS HAVE BEEN TREATED FOR ARTHRITIS OR BONE DISEASES?

