

Orthopedic Stem Cells 101



Adult

Stem cells taken from a child or adult. These can be your own or someone else's.

iPS

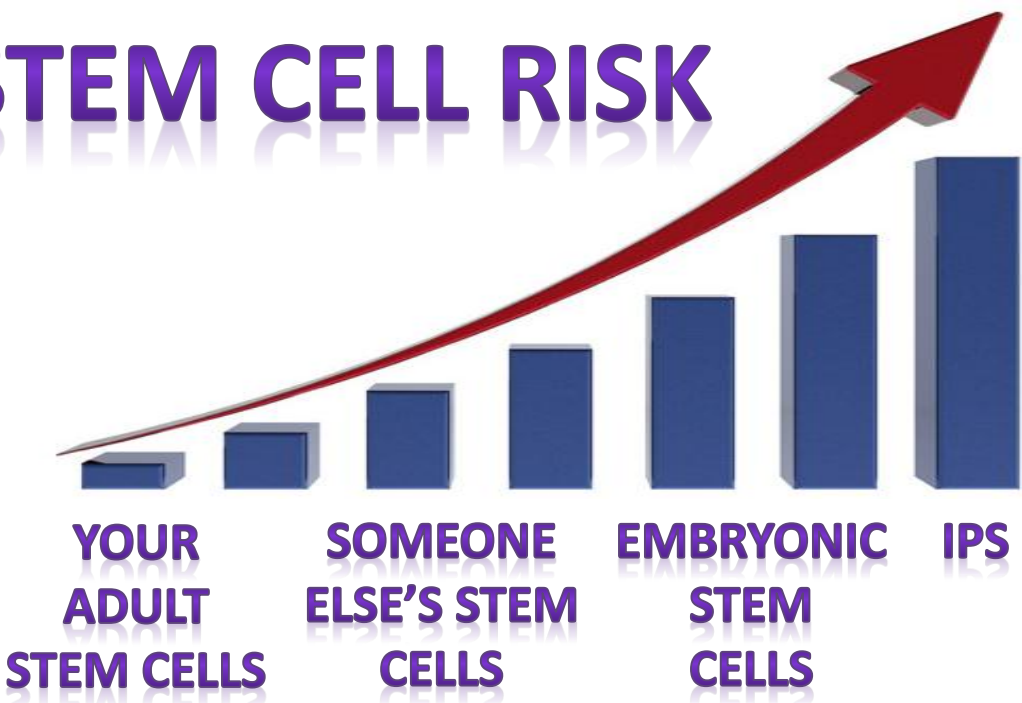
Normal adult cells chemically altered to become a stem cell.

Stem Cell Types

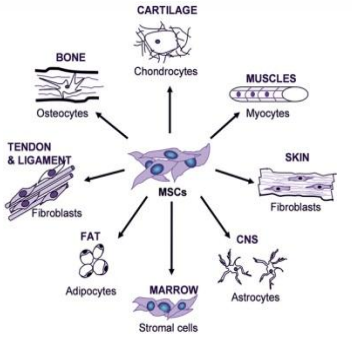
Embryonic

Stem cells taken from an embryo.

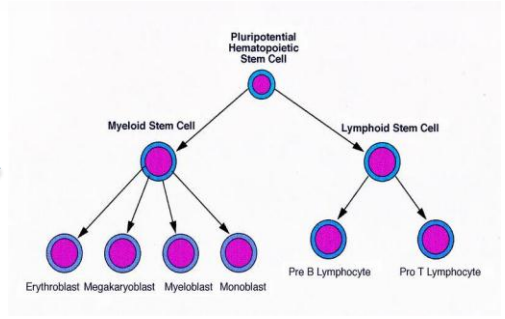
STEM CELL RISK



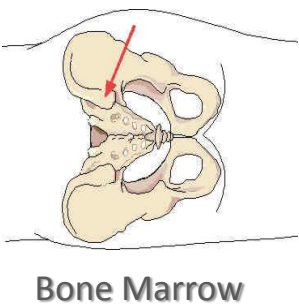
Stem Cell Types used in Orthopedics



Mesenchymal Stem Cells (MSCs) can turn into new bone, cartilage, ligament, muscle, or tendon.



Hematopoietic Stem Cells (HSCs) turn into new blood cells, but can also help establish much needed new blood supply.



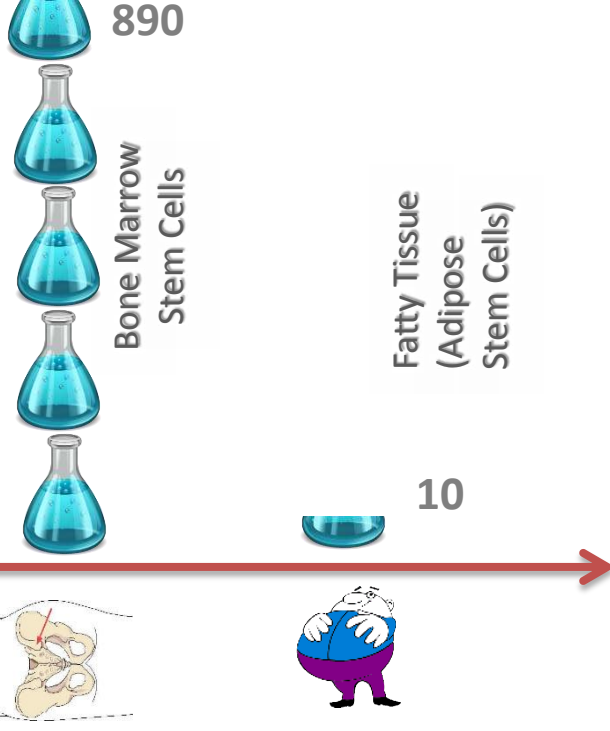
Bone Marrow



Fatty Tissue

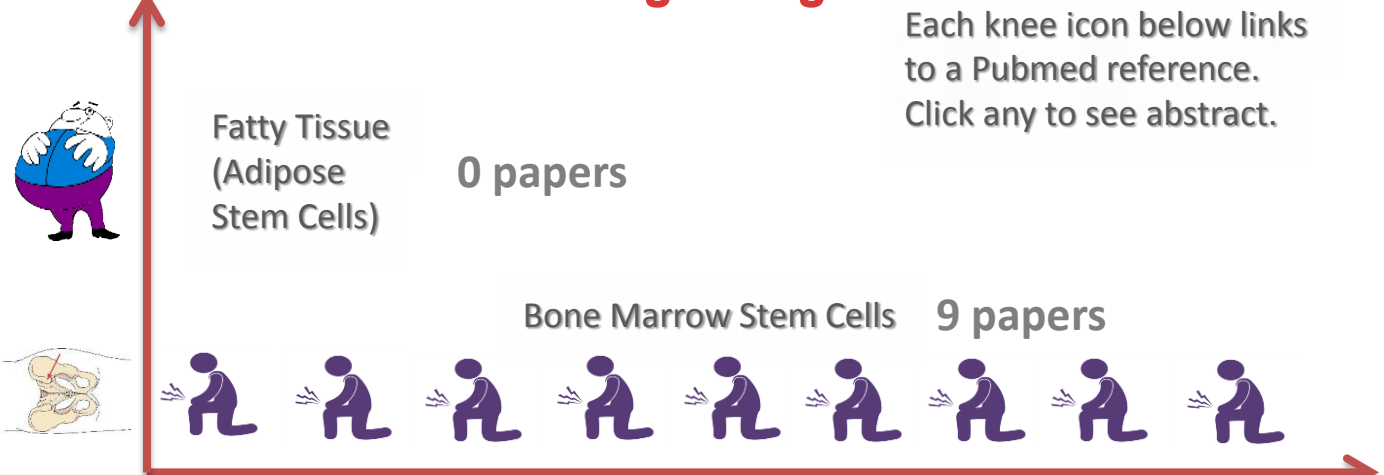
1,000 Research Papers

How much research supports that each stem cell type can repair orthopedic tissues?



Number of citations listed in PubMed under search terms "Adipose SVF Cartilage" vs. "Bone Marrow Mesenchymal Stem Cells Cartilage" as of 5/5/12.

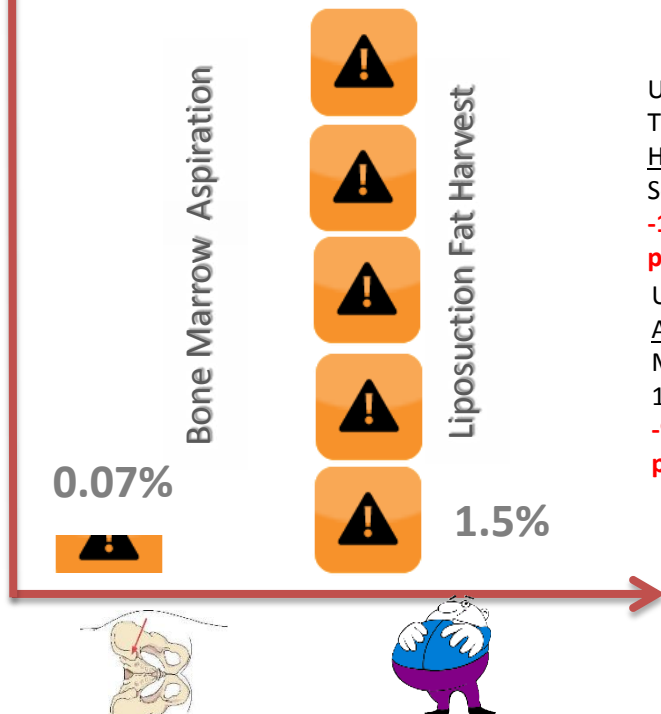
When compared head to head, how many research papers show that one stem cell type is better than the other at making cartilage?



Each knee icon below links to a Pubmed reference. Click any to see abstract.

US National Library of Medicine Search searched 9/29/12 using terms "adipose bone marrow mesenchymal stem cell chondrogenesis". End date of search was 6/21/07. Only papers showing head to head quantitative chondrogenesis considered.

What is the risk of harvesting bone marrow aspirate vs. fat for stem cells?



UK Registry-Includes both BMA and Trepine Biopsies:
[Haematologica](#). 2006 Sep;91(9):1293
-15 adverse events in 20,323 procedures
 Ultrasound Assisted Lipo:
[Aesthetic Plast Surg](#). 2009 Mar;33(2):213-8. Epub 2008 Dec 18
-9 complications in 609 procedures