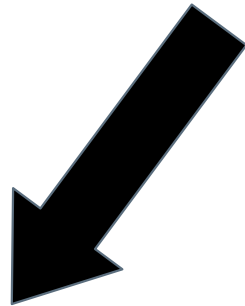


A detailed 3D rendering of a dense population of cells, likely representing mesenchymal stem cells. The cells are depicted with a textured, somewhat irregular surface and are arranged in a complex, overlapping pattern. The color palette is primarily dark blue and black, with some lighter blue and white highlights that suggest internal structures or specific components of the cells. The overall appearance is that of a microscopic view of a tissue or cell culture.

**ПРИМЕНЕНИЕ
МЕЗЕНХИМАЛЬНЫХ КЛЕТОК
КОСТНОГО МОЗГА В
ТРАВМАТОЛОГИИ И
ОРТОПЕДИИ.**

Выполнил: Рашидов Н.Г.

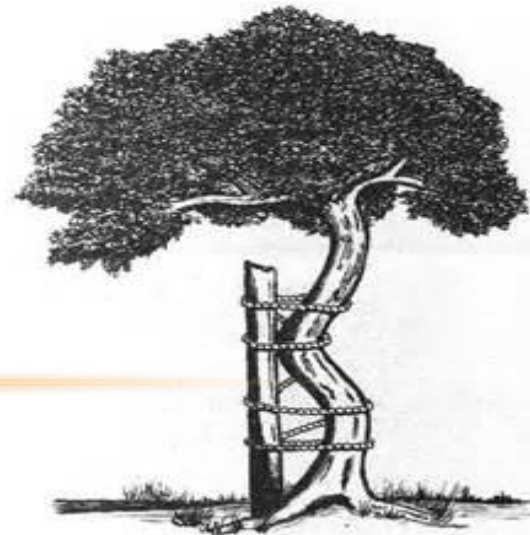
Стволовая клетка



?!



ММСК



-Тотипотентность

-Хоуминг



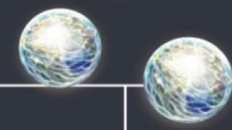
The Mesengenic Process

Bone Marrow/Perosteum

Mesenchymal Tissue



Mesenchymal Stem Cell (MSC)



Proliferation

Commitment

Lineage Progression

Differentiation

Maturation

Marrow Stroma

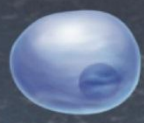
Osteogenesis

Chondrogenesis

Tendogenesis

Myogenesis

Adipogenesis



Transitory Stromal Cell

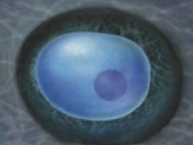
Transitory Osteoblast

Transitory Chondrocyte

Transitory Fibroblast

Transitory Myoblast

Transitory Adipocyte



Unique Micro-niche

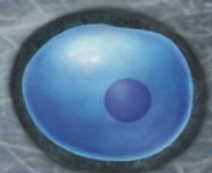
Osteoblasts

Chondrocyte

Fibroblast

Myoblast Fusion

Pre-adipocyte



Stromal Cell

Osteocyte

Hypertrophic Chondrocyte

T/L Fibroblast

Myotube

Adipocyte

MARROW

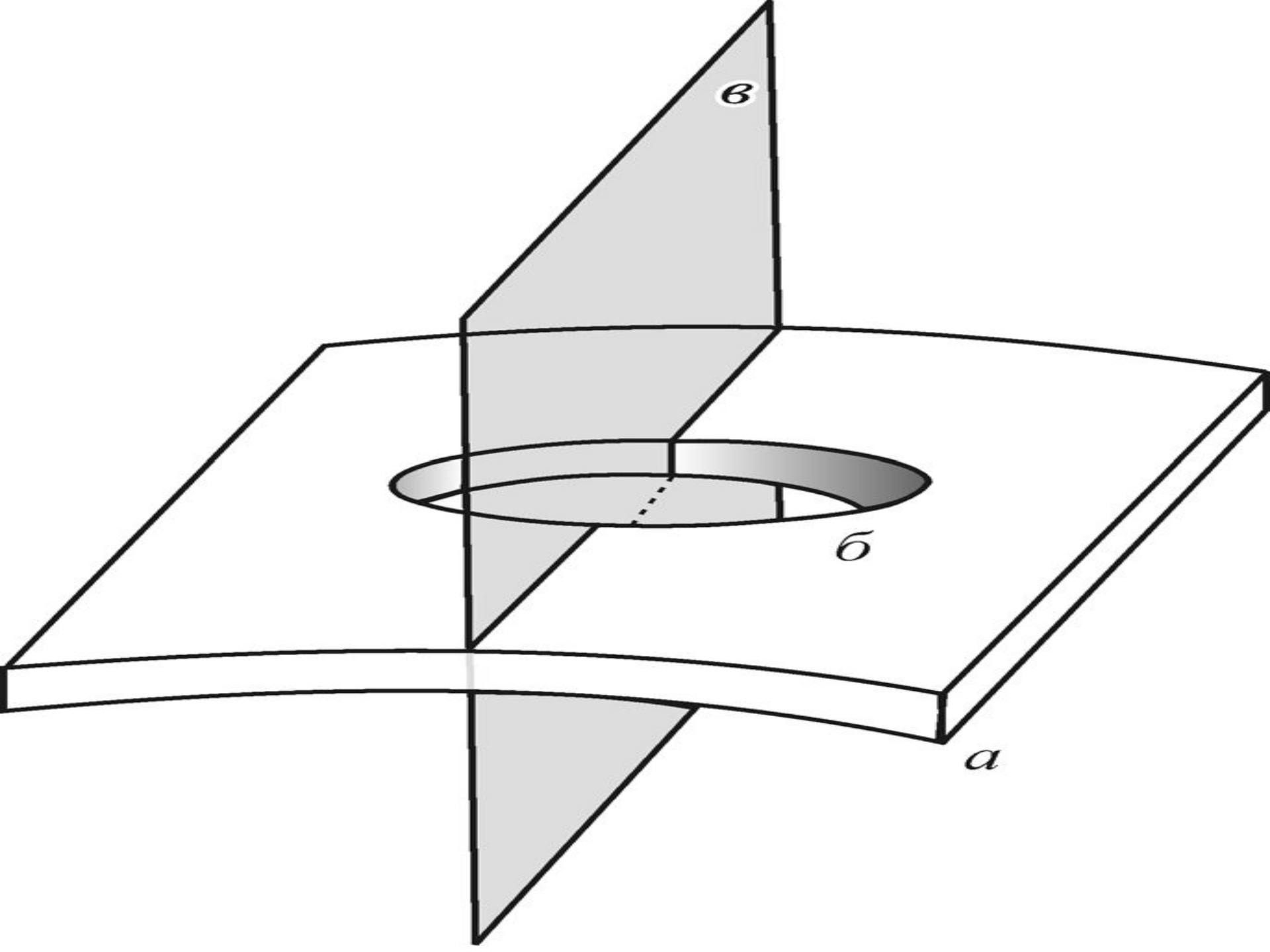
BONE

CARTILAGE

TENDON

MUSCLE

FAT



1-КОНТРОЛЬНАЯ ГРУППА.

I группа



15

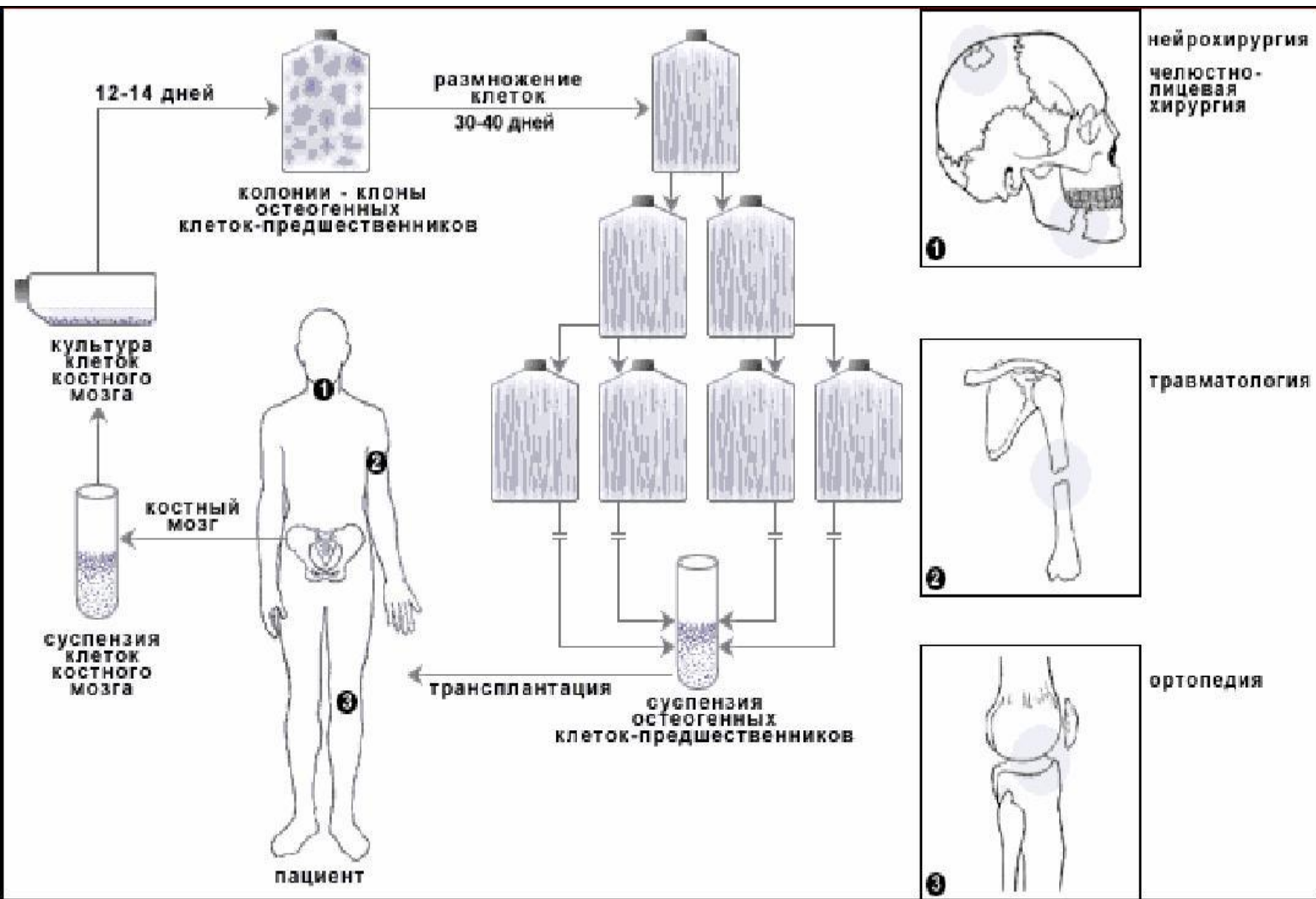
30

90

120

Время, сут

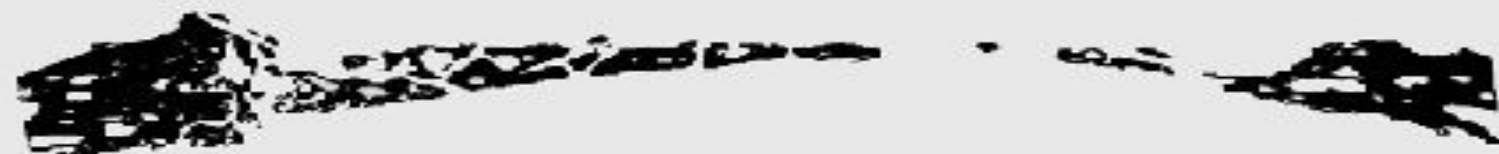
2 группа



II группа



15



30



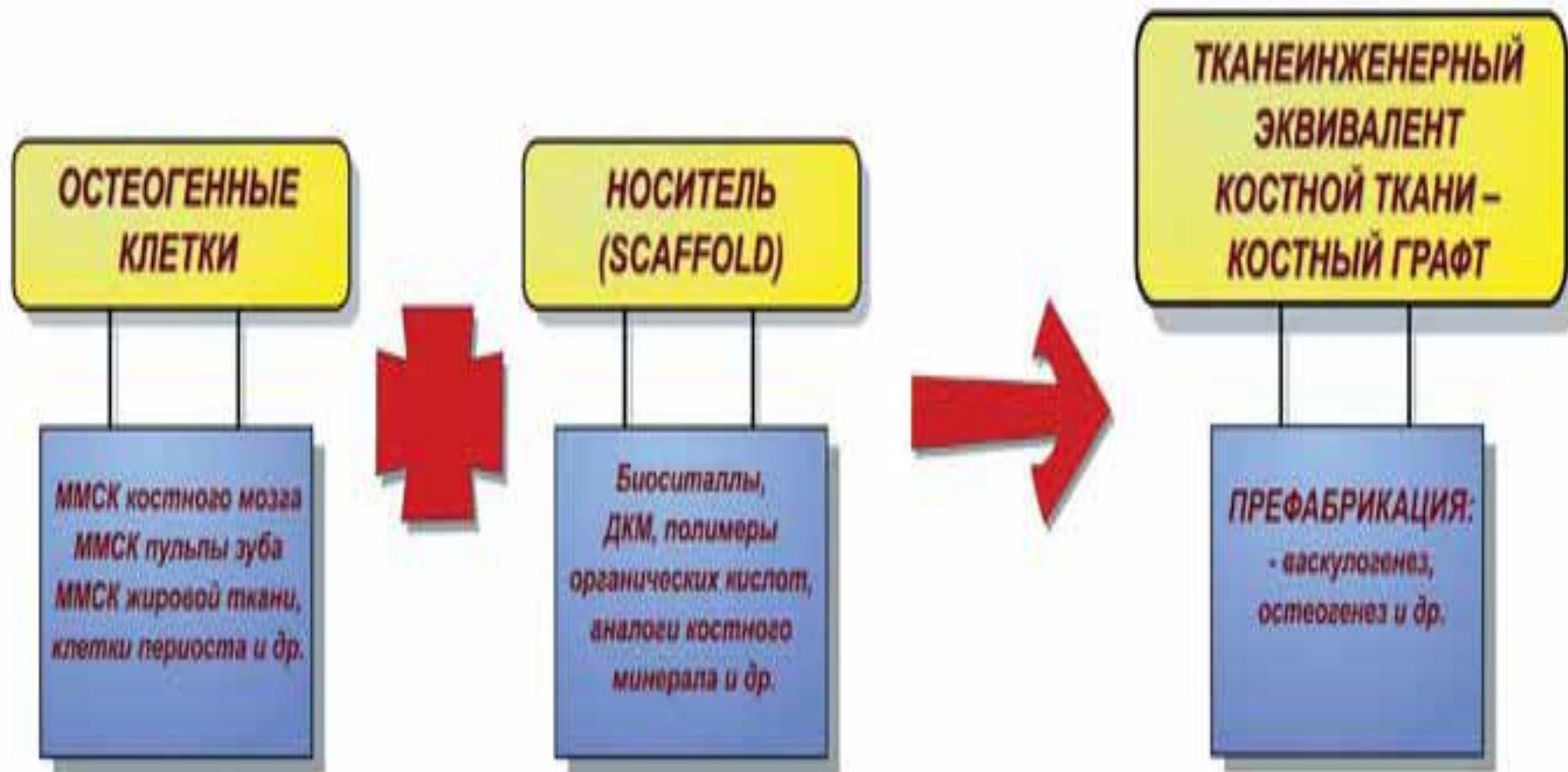
90



120

Время, сут

3 группа



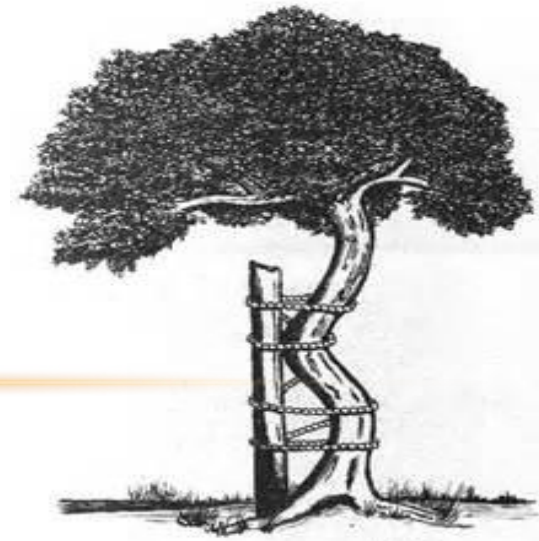
A

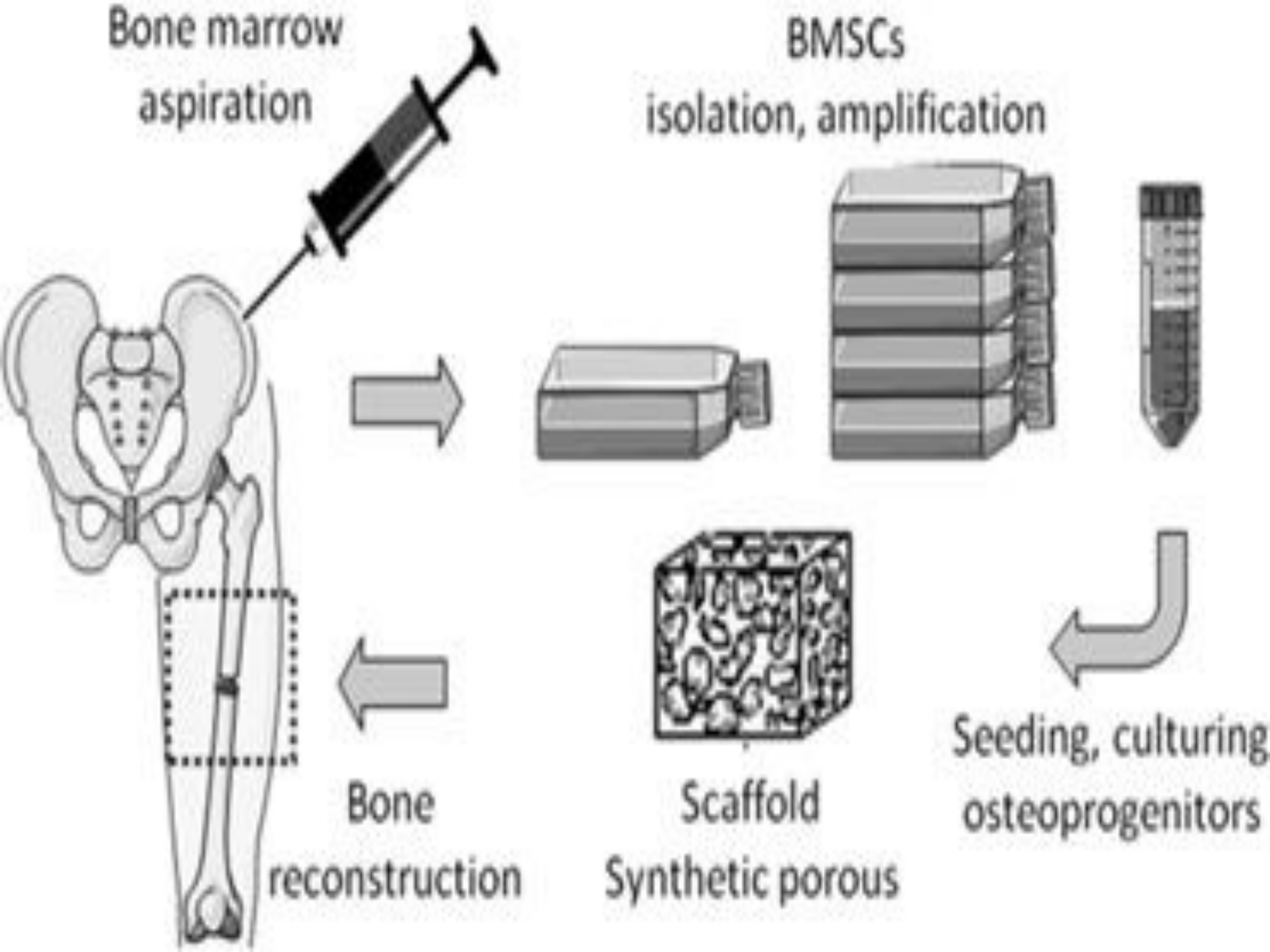


Examples of biomaterials for scaffolding of human MSCs.

- A) *Porous BCP ceramics and*
- B) *(B) injectable paste made of CaP particles suspended in hydrogel for minimal invasive surgery.*

B





III группа



15

30

90

120

Время, сут

Применение ММСК на практике в травматологии и ортопедии.



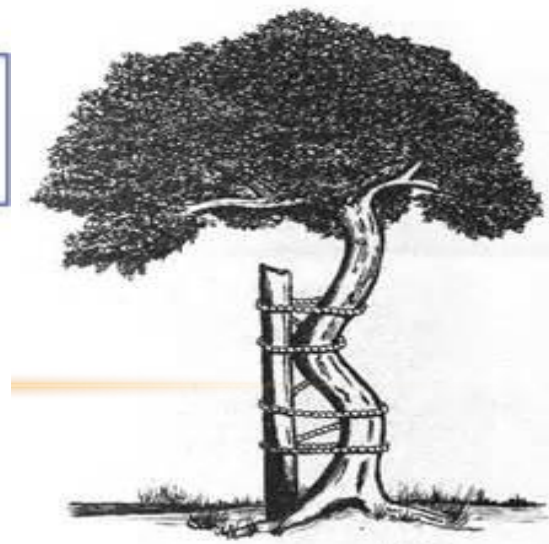
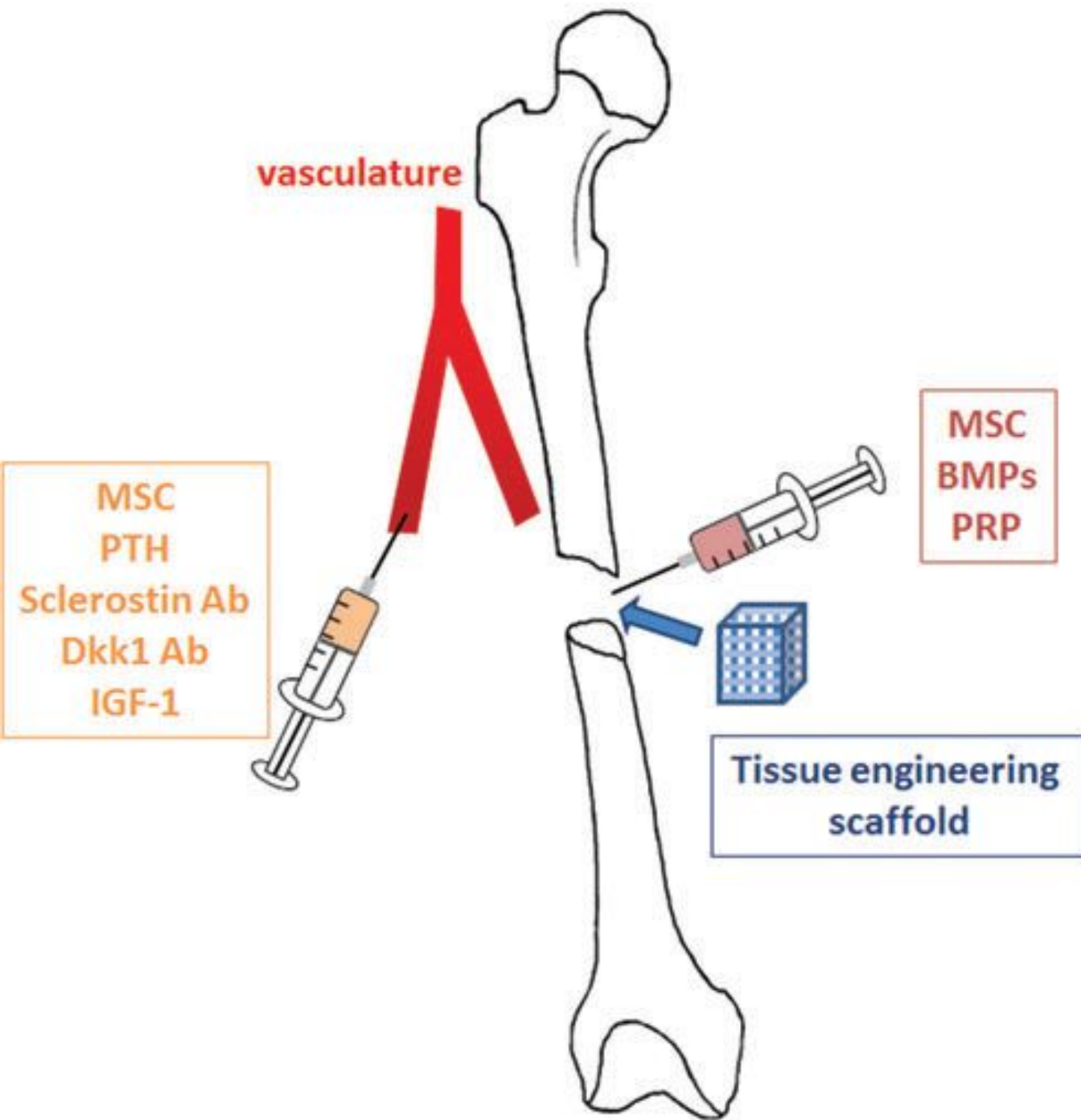
Показания к применению клеточных технологий в ТО:

- большие дефекты костей**
- ложные суставы**
- замедленная консолидация**
- пострезекционные дефекты по
онкологическим показаниям**
- постостеомиелотические дефекты**

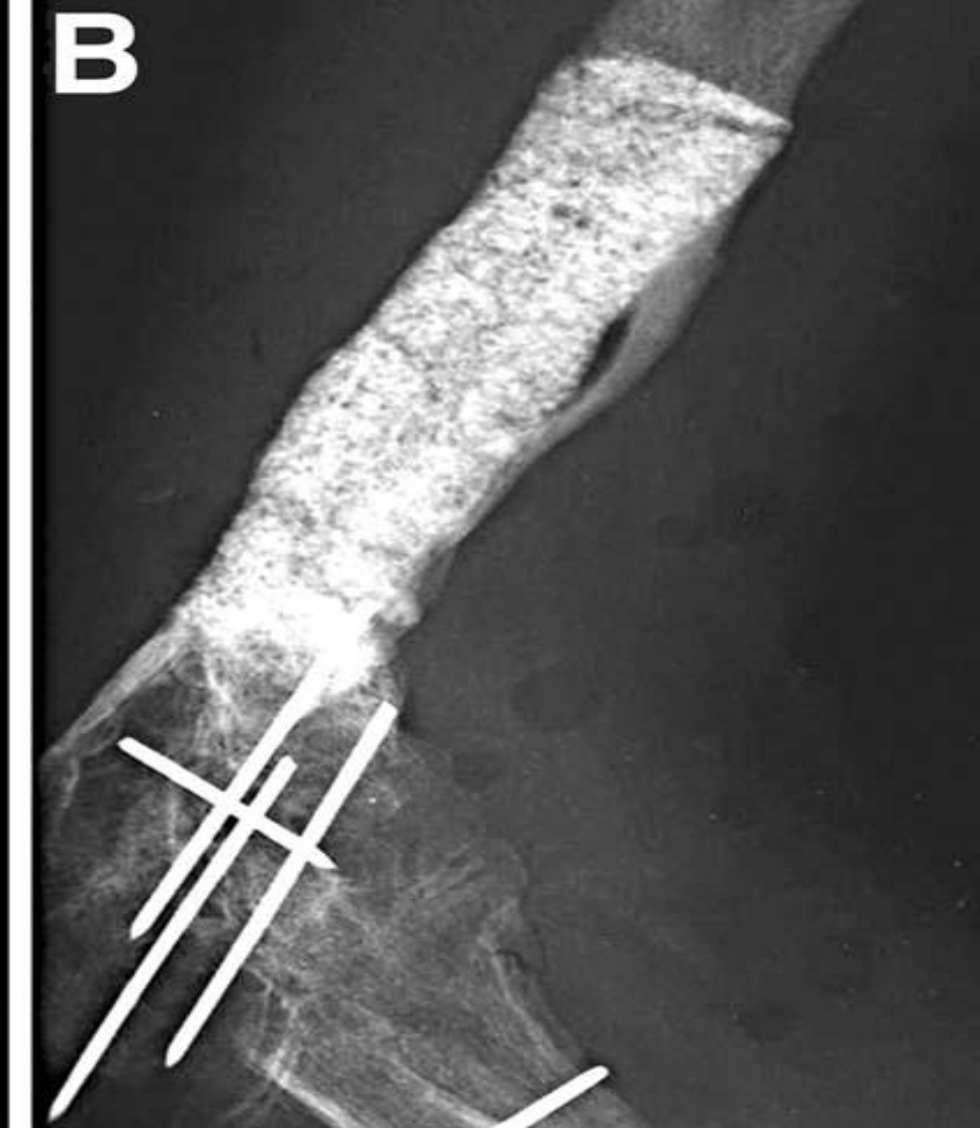


Дефекты длинных костей+ММСК



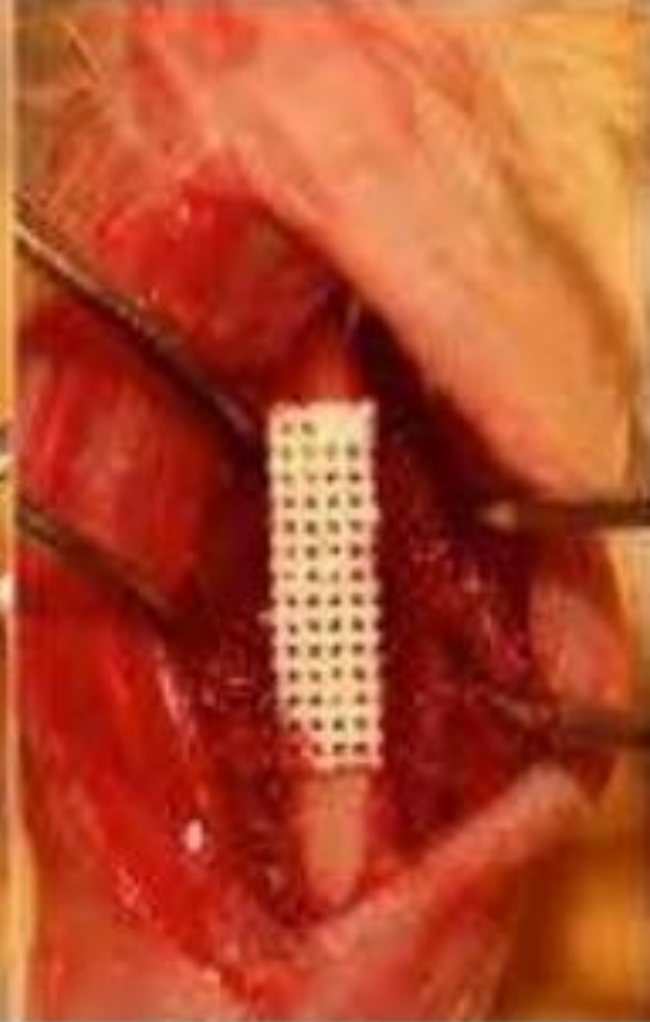


Walter J. R. Rife

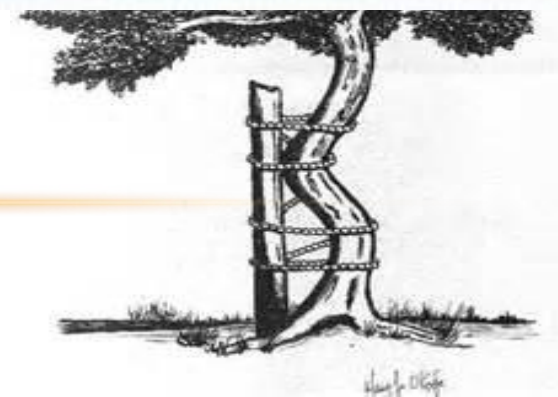


Repair of a large bone defect in the humerus of a 22-year-old patient by autologous BM stromal cells. A) Film obtained before surgery. B) X-ray postoperative control view 18 months after surgery. Performed in collaboration with M. Marcacci and E. Kon, Bologna, Italy.



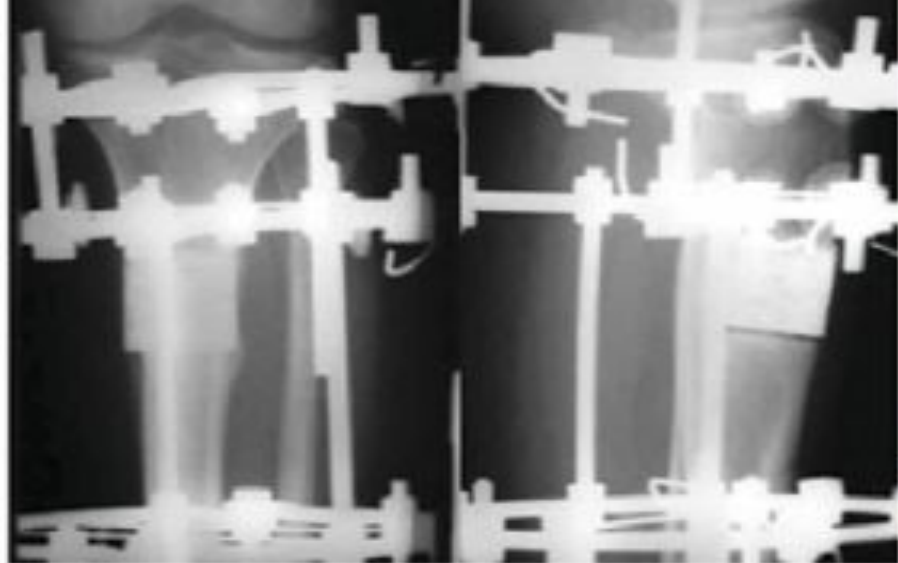


ММСК+НОСИТЕЛЬ





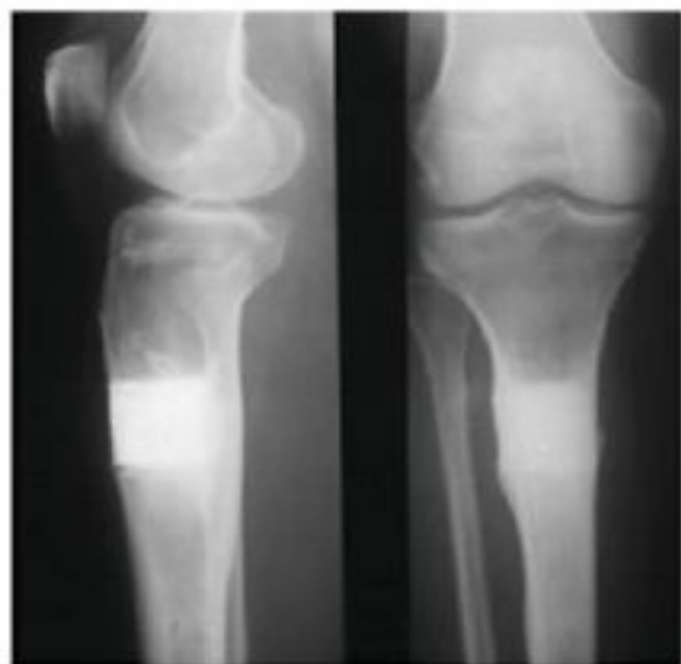
pre-operation



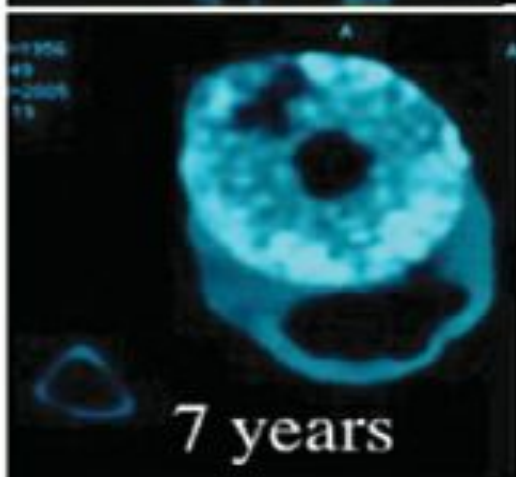
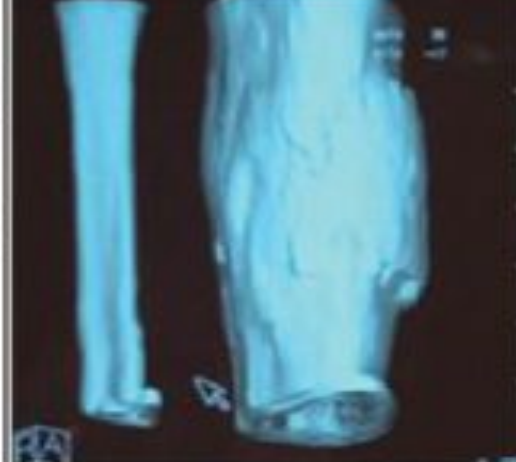
2 months



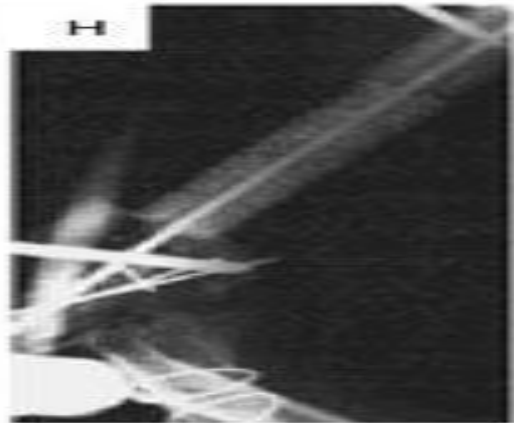
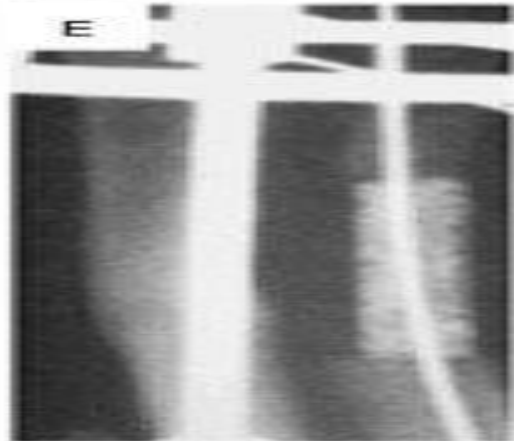
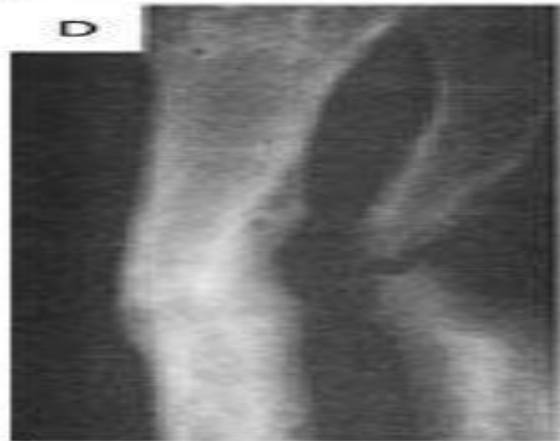
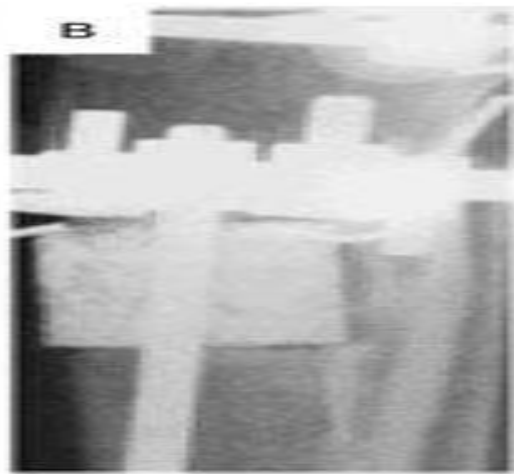
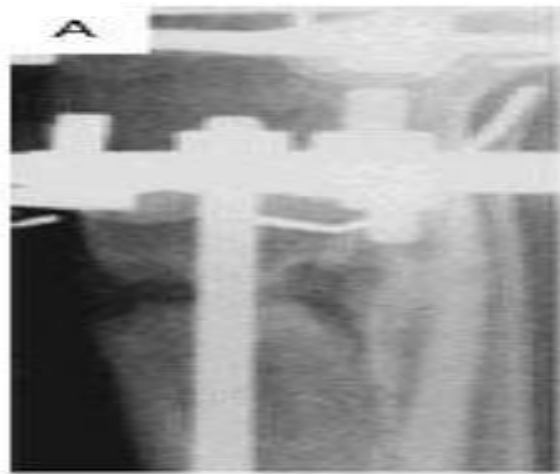
6 months



2.5 years



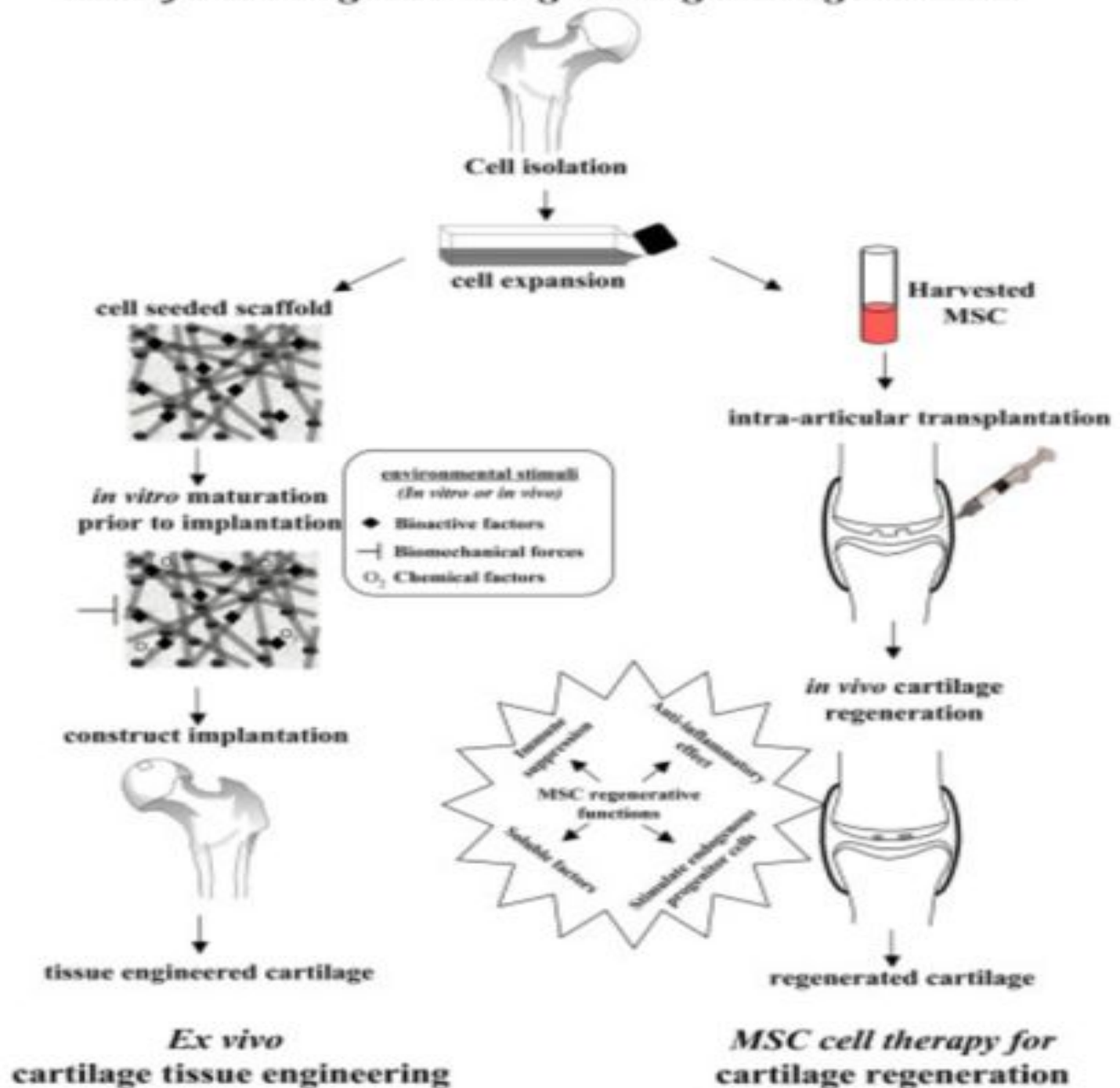
7 years

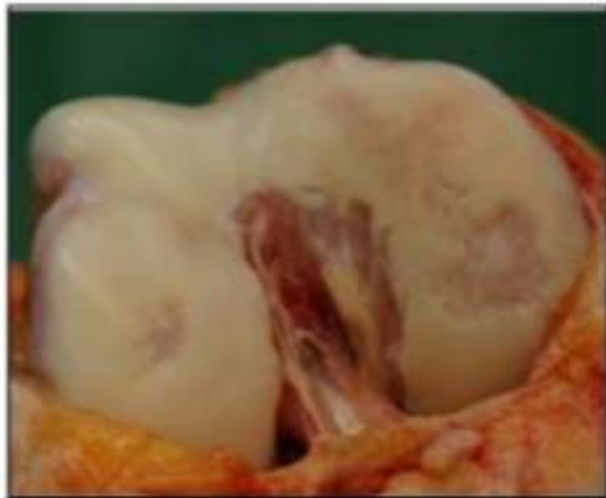


Хирургия суставов+ММСК



MSC for cartilage tissue engineering and regeneration





Cartilage lesions

Transferred cells



Cultured cells



Cells in biomaterials

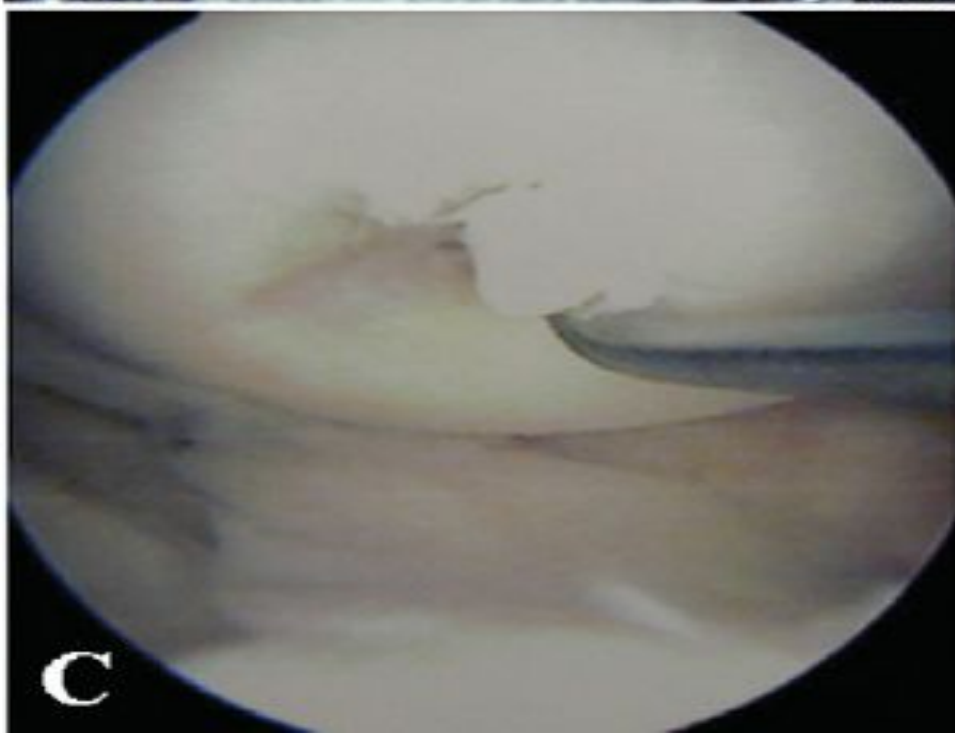
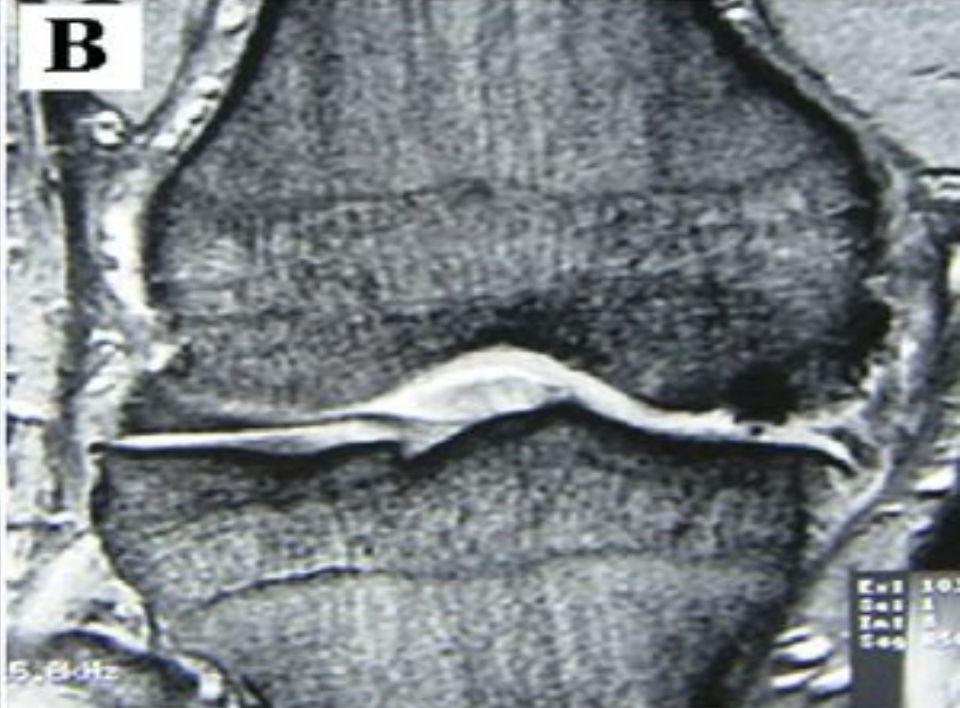
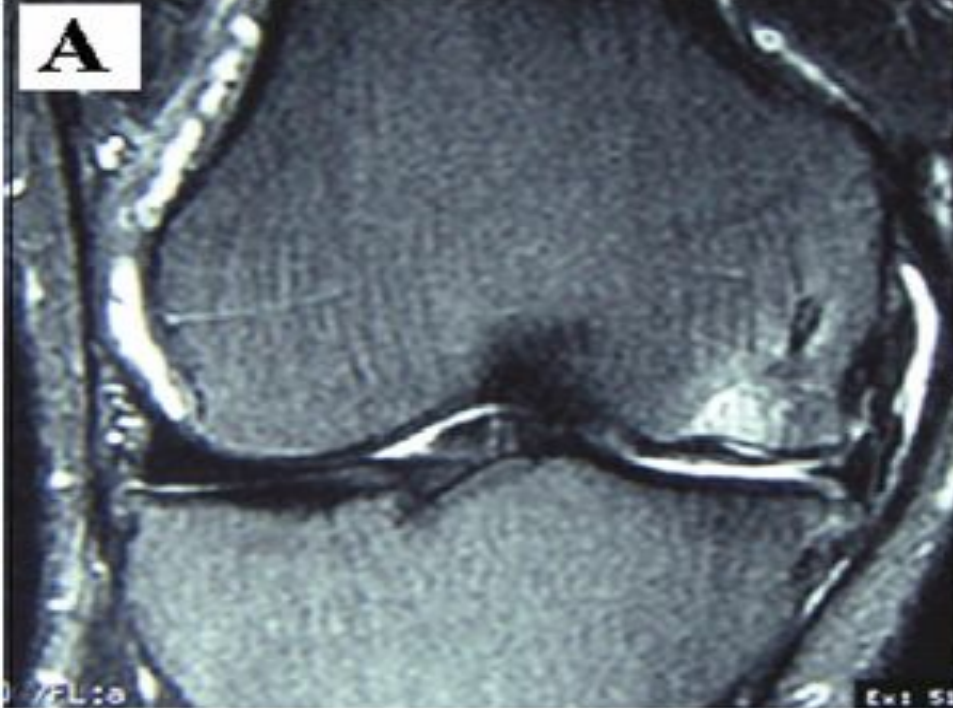
Strategies for cartilage repair.



Autologous chondrocyte transplantation (ACT). Stage 1.



Autologous chondrocyte transplantation (ACT). Stage 2.



**Спасибо за
внимание!**

