

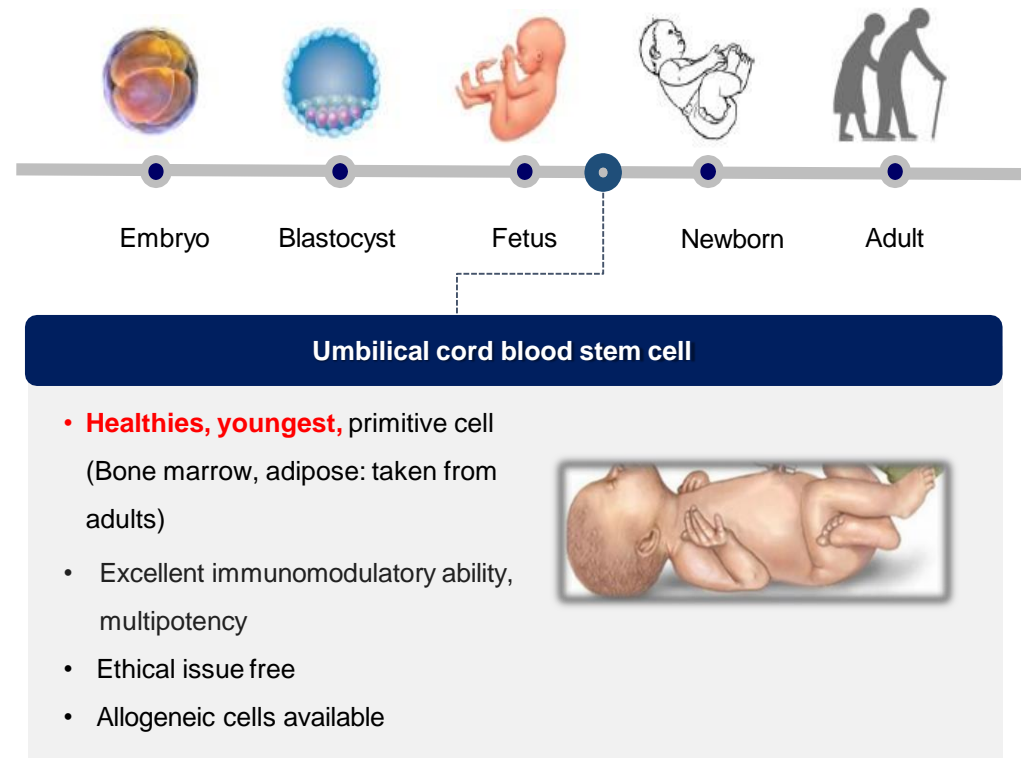
Umbilical cord blood is a potent source of vital energy, essential for the regeneration of all body tissues.



Umbilical cord tissue blood contains potent vitality and represents the youngest form of blood available. It is crucial in treating blood-related diseases such as leukemia and other cancers. Furthermore, it plays a vital role in the development of treatments for various intractable diseases through the use of stem cells derived from umbilical cord blood.

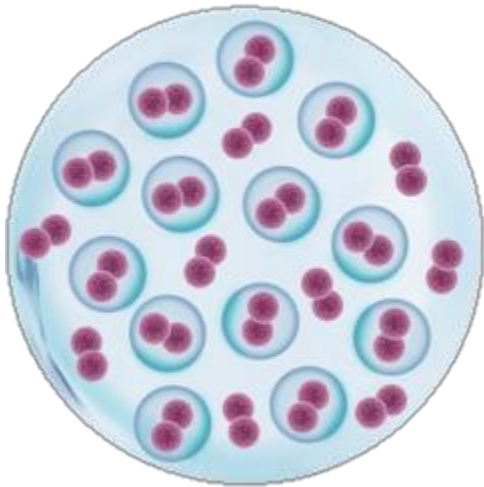
Umbilical Cord Blood Stem Cell

UCB stem cells are **the youngest cells** excellent at suppressing, regulating, & repairing autoimmune diseases.



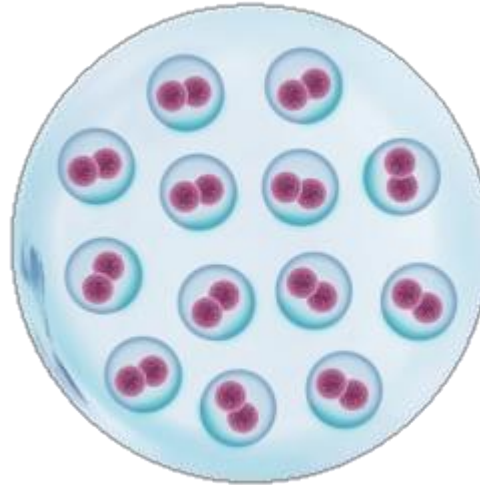
Human cord blood cell conditioned media contains **14 times more of exosomes** and **highly concentrated active ingredients** for powerful cell regeneration and immunity control

[Human cord blood cell CM]



- ✓ Active ingredients abt 4.5X,
- ✓ Efficacy 5X

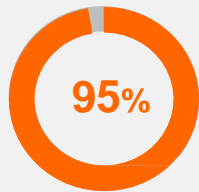
[Human cord blood cell exosome]



- ✓ Active ingredients, abt 3 X
- ✓ The smallest & even size (1/1700 of pores)

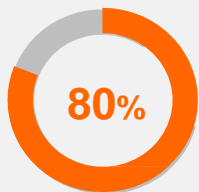
USC-CM exosome Technology

Stem cell isolation



High isolation purity

95+% purity of stem cell isolation



Highly efficient isolation

8 out of 10 umbilical cord, stem cell isolation



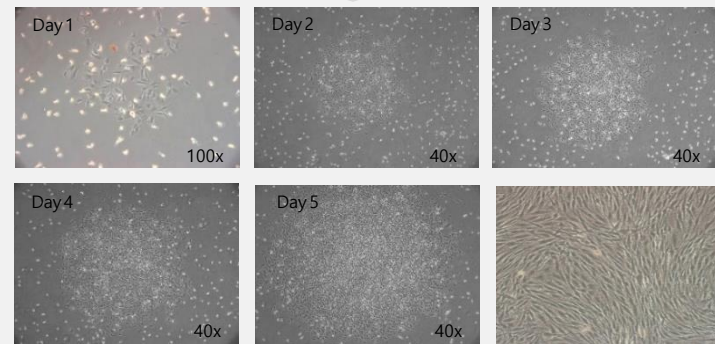
Extended isolation time

Stem cell separation within 72 hrs → secured supply &

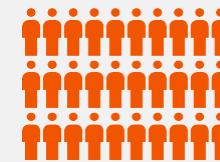
Mass culturing of stem cell



2^{40} ea/unit
(appx. 1 trillion) culture possible



A single unit of cord



300+ patients can be treated

Pharmaceutical Level of Quality Control

[Regulation]

Bioethics and
Safety Act

Umbilical Cord
Blood
Management and
Research Act

Cosmetic Law

“Safety Criteria for Human Tissue-Derived Materials” Safety Standards for Cosmetic Ingredients [Table 3]



- ✓ Qualification check of donor
- ✓ Inspection record of Cell/Tissue extraction
- ✓ Manufacturing hygiene and Manufacturing management standards



- ✓ Safety/toxicity testing for human cell/tissue cultured media
 - Single-dose toxicity testing
 - Repeated-dose toxicity testing
 - Topical toxicity testing, 1st skin irritation testing
 - Topical toxicity testing, eye membrane irritation testing
 - Topical toxicity testing, photosensitization testing
 - Topical toxicity testing, phototoxicity testing
 - Skin sensitization testing
 - Genetic toxicity testing, bacterial reverse mutation test
 - Genetic toxicity testing, in vivo micronucleus assay
 - Genetic toxicity testing, in vitro chromosomal aberration assay
 - Human skin primary irritation test



- ✓ Certificate of analysis
 - Appearance
 - Sterility
 - Mycoplasma
 - Adventitious agents
 - Identification (Protein Concentration)
 - Purity (Cultivation)
 - Purity (DNA extraction)

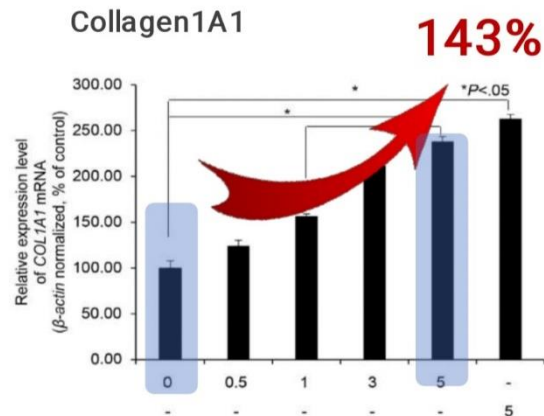
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Core Competency

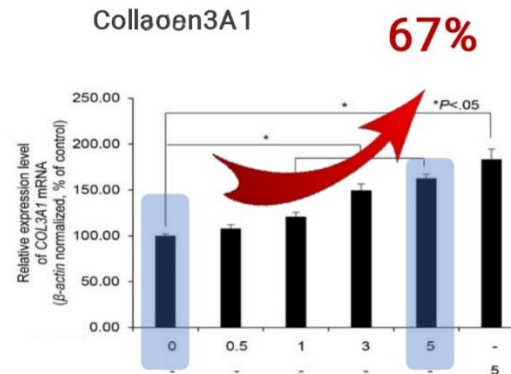
Skin Regeneration Effect

Proven effect of skin regeneration by collagen I&III increase

Collagen synthesis
abt **143% increased**



Collagen III synthesis
abt **67% increased**



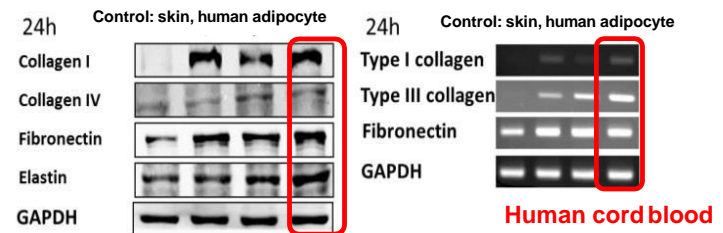
Core Competency

Skin Regeneration Effect

Skin tissue regeneration

Protein synthesis stimulation

*Skin composition (expression of Collagen, Fibronectin, Elastin)



Rejuvenating protein 11

'Nature', 'Cell', 'Science' introduce **rejuvenating protein 11**

Open Med. 2017; 12: 376-383 DE GRUYTER

Review article

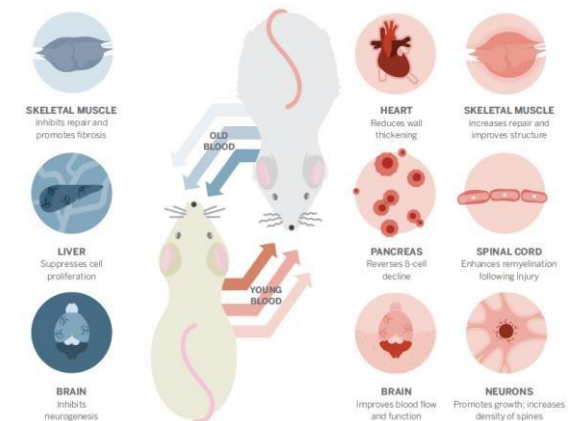
Massimo Conese*, Annalucia Carbone, Elisa Beccia, Antonella Angiolillo

The Fountain of Youth: A tale of parabiosis, stem cells, and rejuvenation

ation. Eventually, further studies have brought to identify some soluble factors in part responsible for these rejuvenating effects, including the chemokine CCL11, the growth differentiation factor 11, a member of the TGF- β superfamily, and oxytocin. The question about giving whole blood or specific factors in helping rejuvenation is open, as well as the mechanisms of action of these factors, deserving further studies to be translated into the life of (old) human beings.

Young blood versus old blood

Factors in "young blood" activate stem cells and rejuvenate organs and cells in old mice. Factors in "old blood" appear to inhibit regenerative capacity in young mice.



Harvard researchers demonstrate reverse aging gene protein 11!

Restoring systemic **protein 11** levels reverses age-related dysfunction in **mouse skeletal muscle**. **Science**. 2014 May 9;344(6184):649-52.

Growth differentiation factor 11 is a circulating factor that reverses **age-related cardiac hypertrophy**. 2013 May 9;153(4):828-39

Protein 11 modulates NGN3+ islet progenitor cell number and promotes **beta-cell differentiation in pancreas development**.

Vascular and neurogenic rejuvenation of the aging mouse brain by young systemic factors.

Protein 11

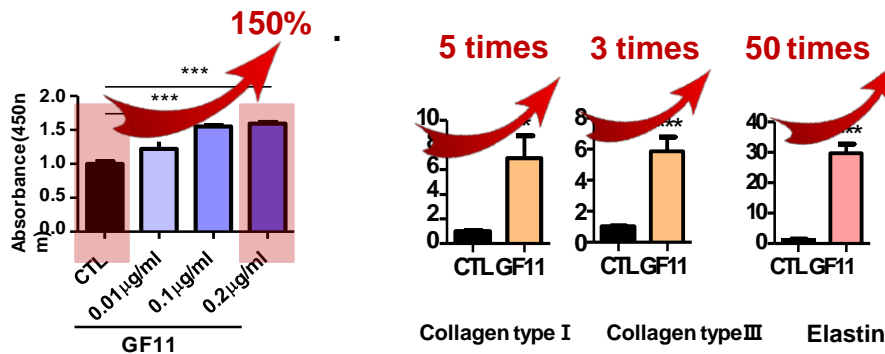
Protein 11 induces skin cell proliferation & skin protein synthesis that leads to skin rejuvenation.

Protein 11 concentration is increased by 0.2ug/ml Compared to untreated fibroblast regeneration

Collagen I, III, elastin compared to untreated

150% increased skin regeneration

50 times more proliferation of skin composition substances



* Protein 11(Growth differentiation factor 11)?

The 'key rejuvenation' growth factor stimulates the synthesis of collagen and elastin in fibroblasts, which aids in skin regeneration and lifting.

Ingredient of enhancing skin immunity

Skin trouble caused by reduced immunity, is recovered with
26 anti-inflammatory ingredients

GDF-11	Adiponectin/ Acrp30	Angiogenin	CalbindinD	Collagen1α1	Collagen IVα1	EGF	HB-EGF	Endostatin	FGF acidic
FGF basic	FGF-13 1B	Fibroblast Activation Protein	Fibronectin	Galectin-3	Galectin-1	GM-CSF	HGF	HGF R/cMET	IGFBP-1
IGFBP-2	IGFBP-3	IGFBP-6	IGFBP-rp1/IGFBP-7	M-CSF	MCSF R/CD115	β-NGF	NT-3	NT-4	PDGF-AA
PDGF-BB	PDGF-CC	PDGF-DD	SLPI	Thrombospondin-2	VEGF-A	VEGF-C	VEGF-D	VEGF R1	VEGF R2/KDF
VEGF R3	Vitamin D Binding Protein	BMP-2	BMP-4	BMP-7	BMP-9	BMP-10	GDF-15	IL-2Rα/CD25	IL-2
IL-3	IL-7	IL-10	IL-11	IL-12/23 p40	IL-12 p70	IL-6	IL-8	IL-13	IL-15
IL-16	IL-17A	IL-17C	IL-18	IL-19	IL-21	IL-22	IL-23	IL-27	IL-28B/IFN-γ3
IL-33	IL-36β/IL-1F8	Lumican	MIF	Angiopoiein-1	Tie2	L-selectin	PIGF	MCAM/CD146	Gas6
Growth Hormone	LIF	SCF	TIMP-2	FGF7(KGF)	TGF β1	IL-5	IL-28B/IFN-γ2	TIMP-1	

Ingredient of activating hair loss prevention

28 active ingredients for hair loss prevention
to induce **healthy scalp environment**

GDF-11	Adiponectin/ Acrap30	Angiogenin	CalbindinD	Collagen1α1	Collagen IVα1	EGF	HB-EGF	Endostatin	FGF acidic
FGF basic	FGF-13 1B	Fibroblast Activation Protein	Fibronectin	Galectin-3	Galectin-1	GM-CSF	HGF	HGF R/cMET	IGFBP-1
IGFBP-2	IGFBP-3	IGFBP-6	IGFBP-rp1/IGFBP-7	M-CSF	MCSF R/CD115	β-NGF	NT-3	NT-4	PDGF-AA
PDGF-BB	PDGF-CC	PDGF-DD	SLPI	Thrombospondin-2	VEGF-A	VEGF-C	VEGF-D	VEGF R1	VEGF R2/KDF
VEGF R3	Vitamin D Binding Protein	BMP-2	BMP-4	BMP-7	BMP-9	BMP-10	GDF-15	IL-2Rα/CD25	IL-2
IL-3	IL-7	IL-10	IL-11	IL-12/23 p40	IL-12 p70	IL-6	IL-8	IL-13	IL-15
IL-16	IL-17A	IL-17C	IL-18	IL-19	IL-21	IL-22	IL-23	IL-27	IL-28B/IFN-γ3
IL-33	IL-36β/IL-1F8	Lumican	MIF	Angiopoiein-1	Tie2	L-selectin	PIGF	MCAM/CD146	Gas6
Growth Hormone	LIF	SCF	TIMP-2	FGF7(KGF)	TGF β1	IL-5	IL-28B/IFN-γ2	TIMP-1	