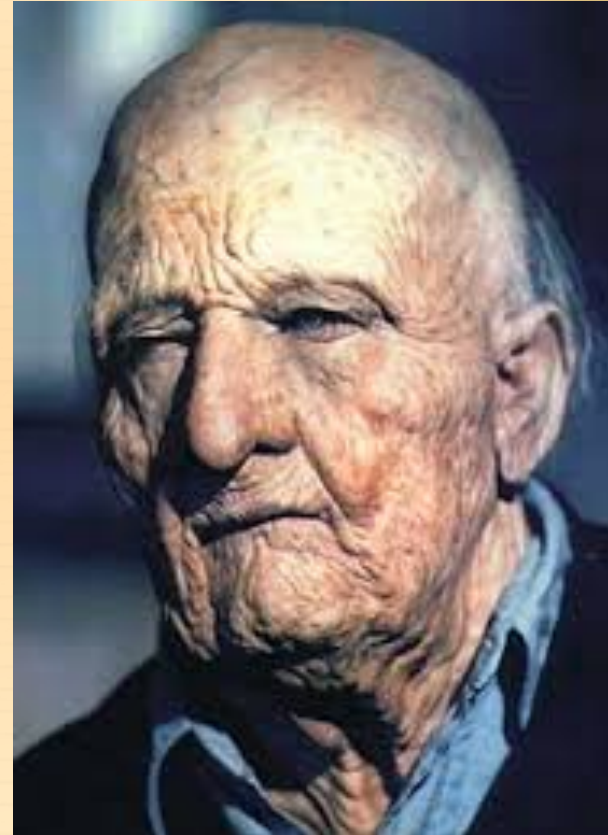


# Premature Aging

- Our bodies are not in a pristine state.
- We are all aging prematurely. Our bodies, our immune system and the stem cells that support it are breaking down. They are not as efficient as they used to be.
- But in babies who are operated on in utero doctors perform incisions, tissue grafts and sutures, but there is no inflammatory response observed during the surgery.
- And when the babies are born, many are born with no scar.
- This is thought to be because of the high population of pristine, robust stem cells, excreting nearly perfect proteins.



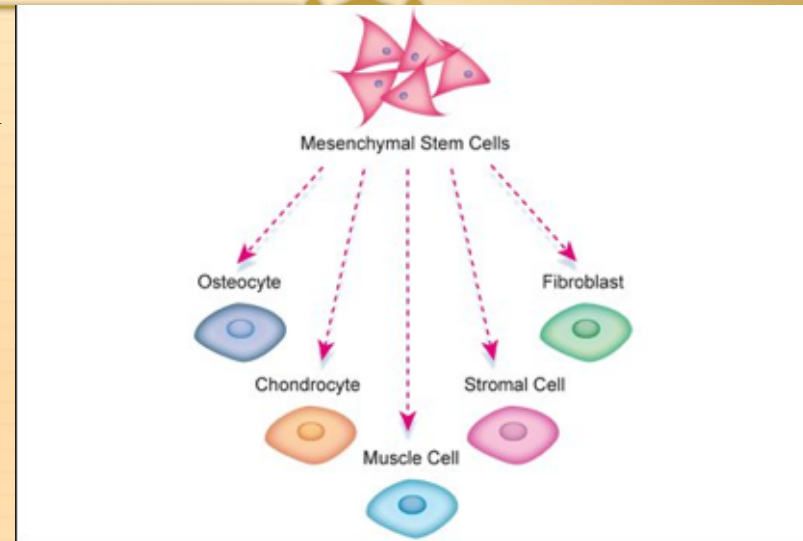
# Premature Aging

- So somewhere in our DNA are the keys to a robust immune system, anti-aging, and scarrless healing.
- But due to life in our harsh environment those abilities seem to “turn off” after we’re born, and by the age of 30 there is a measurable decrease in the efficiency of our immune system, and a marked decline in the population and performance of a special set of stem cells called “Mesenchymal Stem Cells”



# Stem Cells & Cytokines

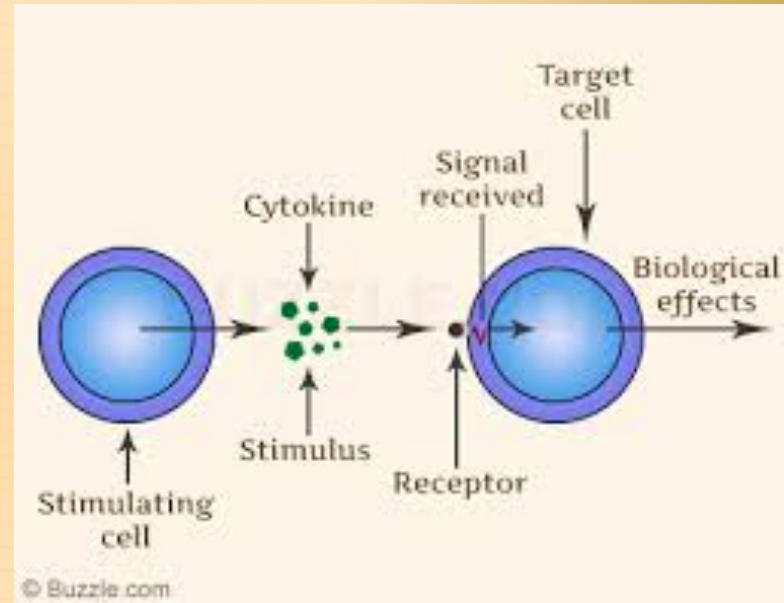
- Until just a few years ago, stem cell scientists thought that mesenchymal stem cells worked by migrating to the place of damage and differentiating into needed cells.
- We now know that they also, (and even more so) perform by orchestrating other cells to repair damage or produce rejuvenation through the secretion of cytokines.
- These cytokines are proteins, or physical manifestations of the DNA's information that perform the virtually miraculous tasks involved in wound healing.



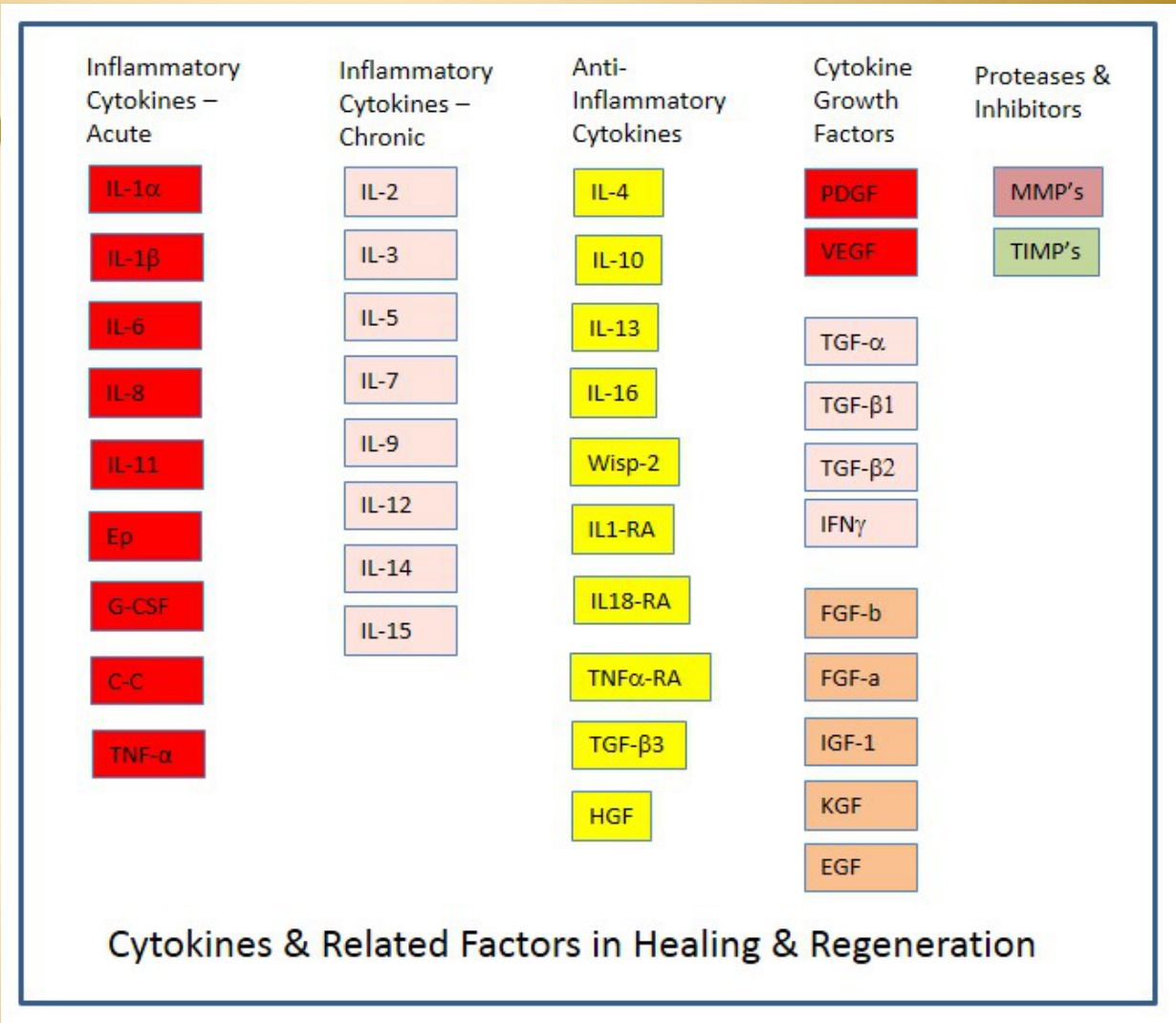


# Stem Cells & Cytokines

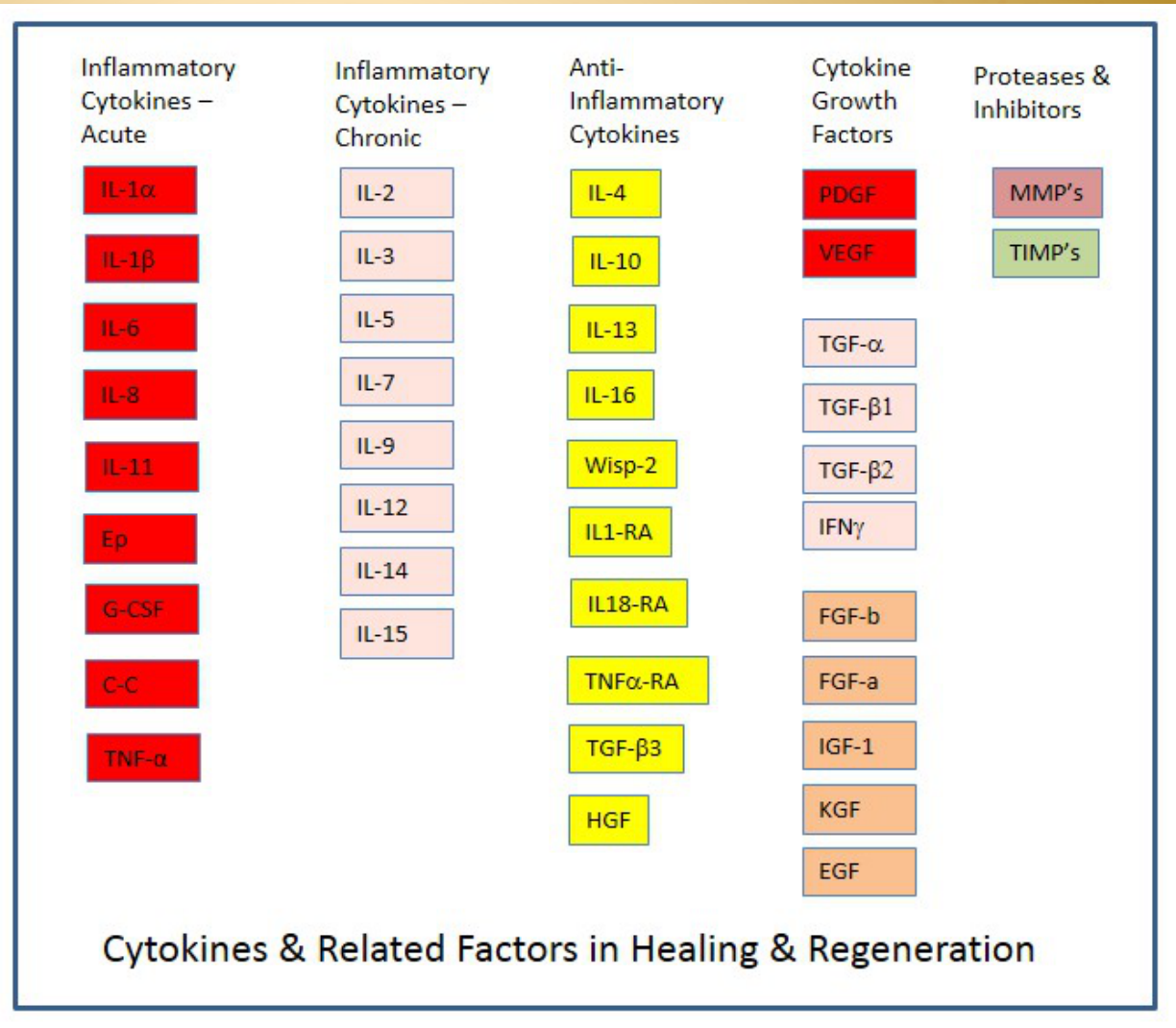
- Researchers have taken mesenchymal stem cells from healthy young humans and grown them in the laboratory and stimulated them to secrete cytokines in abundance.
- These cytokines are then harvested, exported, sorted, cold filtered, purified, and preserved.
- So there is no human tissue, DNA, or other uniquely identifiable tissue present. Only the pure, pristine, robust proteins called Stem Cytokines.



- These are some of the over 500 cytokines that may be released during the wound healing cascade.
- Understanding the entire wound healing cascade is essential to augmenting it via microchannel delivery of the proper profile of pristine, robust cytokines.
- The experts formulating Procell Therapies “Livra” skin care line have identified the entire cytokine release, over the entire wound healing cascade.

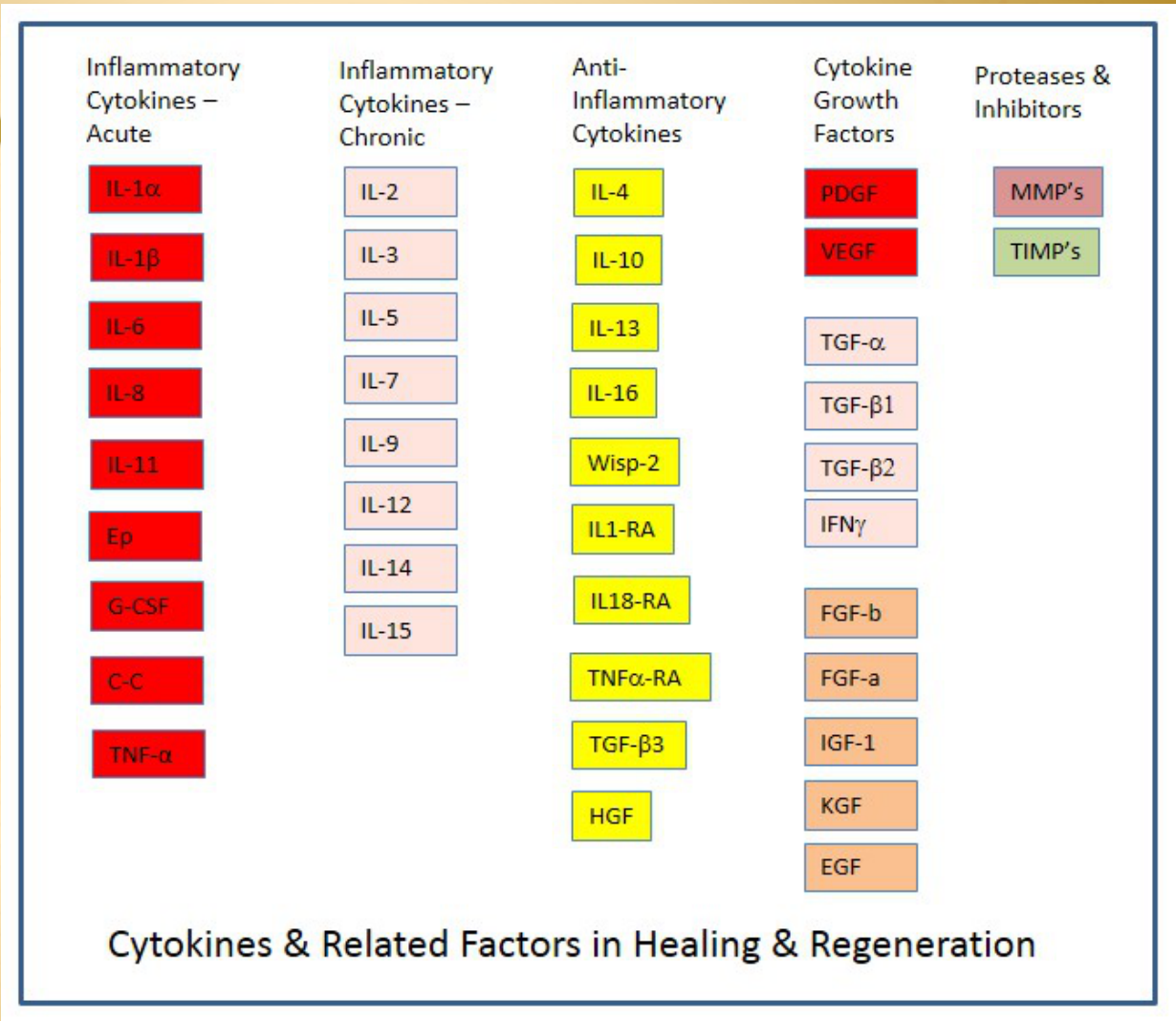


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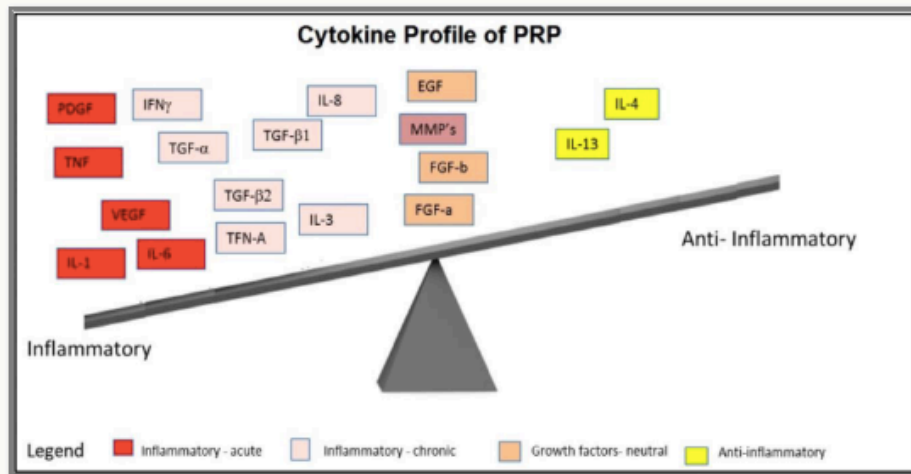
- This formulation answered all of our questions about not only the enhancement of cell division, cell proliferation and cell survival via “Growth Factors”...
- But it also answered concerns some have expressed over the use of individual growth factors alone, and how simply augmenting one, or just a few growth factors, without inhibitors could lead to uncontrolled cell division.
- Our products augment the entire cascade from start to finish!



# The PRP Pattern is Inflammatory



Platelet rich plasma (PRP) is inflammatory



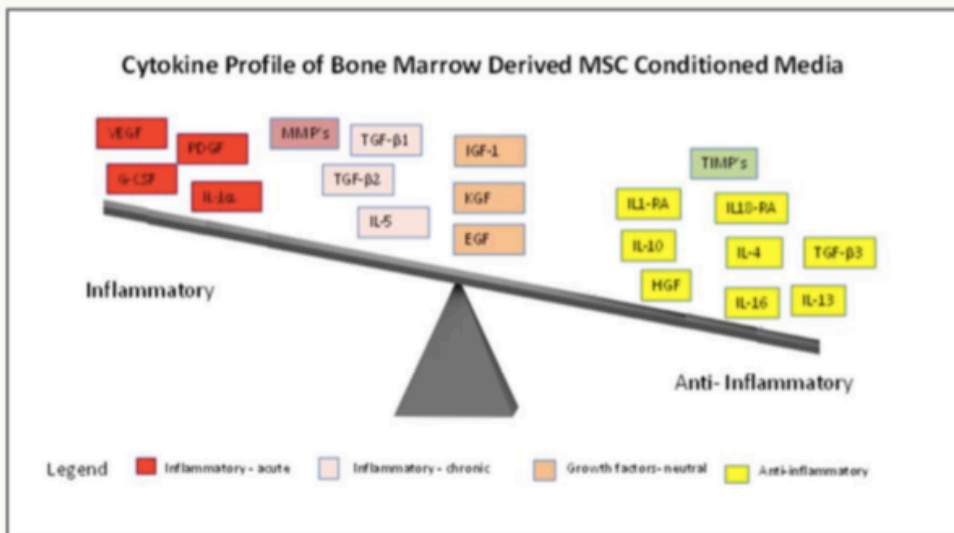
- Autologous Platelet Rich Plasma (PRP) pattern is **highly inflammatory**.
- Consistent with its action at time of injury and the role of platelets in **triggering inflammation**.



# Mesenchymal Stem Cell Cytokine Pattern is Anti-Inflammatory

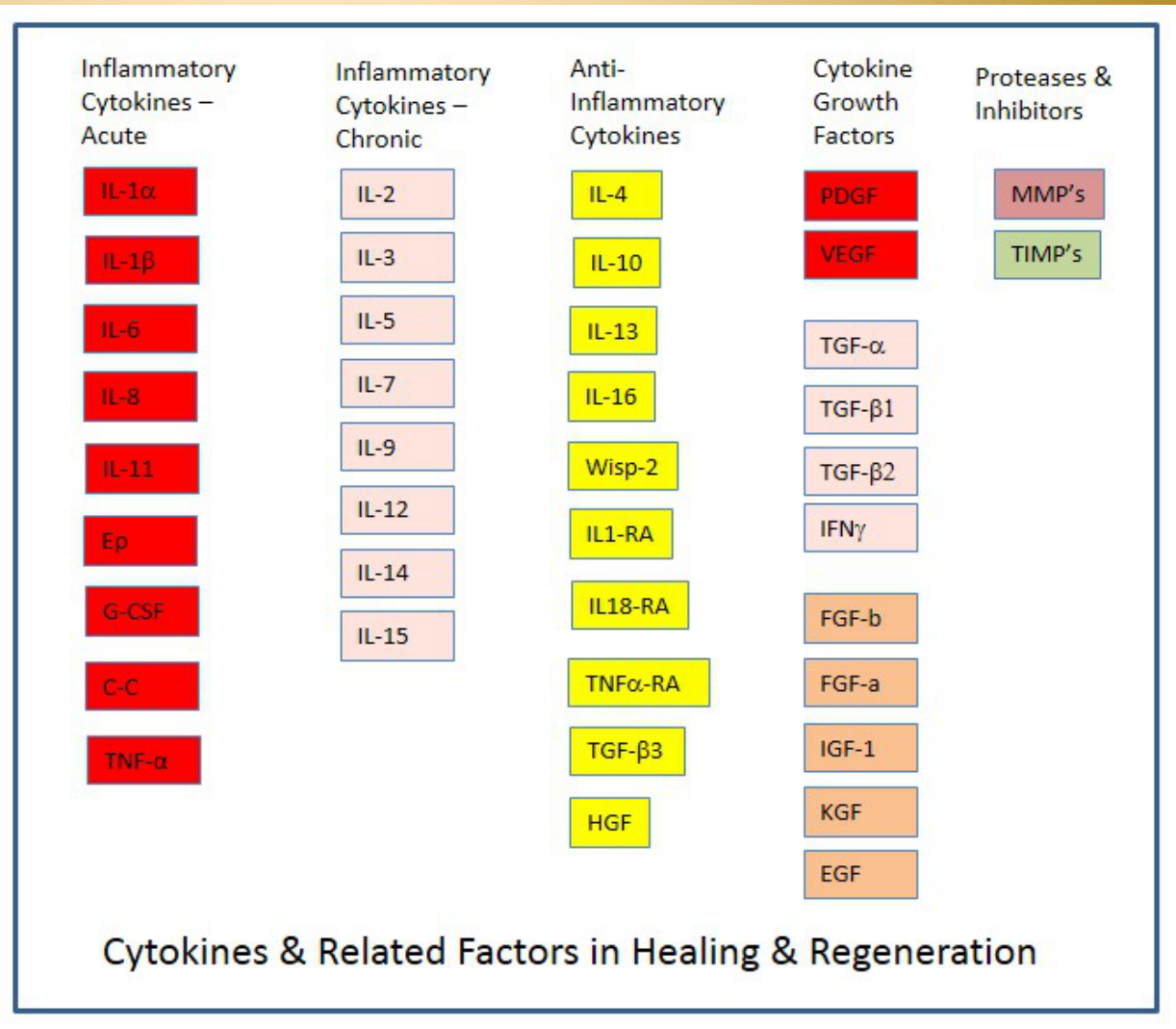


## BM-MSC Conditioned Media



- Highly anti-inflammatory pattern.
- Cell source volunteer donors, average age 22 years.
- Close medical monitoring
- Younger cells replicate faster, produce greater quantities of growth factors and cytokines in culture.
- BM-MSC appear to have distinct advantages over all other cytokine sources.

- Older cytokine technologies like PRP for example yield relatively few cytokines and tend to be weighted toward the inflammatory cytokines created by platelets.
- PRP yields cytokines that are only as good as the aging client's body is able to produce.
- Human mesenchymal stem cells contain the DNA hardware to produce a more sophisticated cytokine profile than those produced in PRP, fibroblast and other plant and animal media.



- When it comes to hair regrowth, the Procell Hair Regrowth Serum contains the cytokines present in PRP.
- It also contains the more recently proven Wnt1a, critical in maintaining the hair-inducing gene expression of Dermal Papilla cells.
- PRP does not contain an enriched Wnt1a medium and so is lacking on that front.

Inflammatory Cytokines – Acute	Inflammatory Cytokines – Chronic	Anti-Inflammatory Cytokines	Cytokine Growth Factors	Proteases & Inhibitors
IL-1 $\alpha$	IL-2	IL-4	PDGF	MMP's
IL-1 $\beta$	IL-3	IL-10	VEGF	TIMP's
IL-6	IL-5	IL-13	TGF- $\alpha$	
IL-8	IL-7	IL-16	TGF- $\beta$ 1	
IL-11	IL-9	Wisp-2	TGF- $\beta$ 2	
Ep	IL-12	IL1-RA	IFN $\gamma$	
G-CSF	IL-14	IL18-RA	FGF-b	
C-C	IL-15	TNF $\alpha$ -RA	FGF-a	
TNF- $\alpha$		TGF- $\beta$ 3	IGF-1	
		HGF	KGF	
			EGF	

Cytokines & Related Factors in Healing & Regeneration



- PRP is much more cumbersome and expensive to the patient, (not to mention the lack of Wnt1A).
- So the Procell Therapies Hair Regrowth Serum is simply more advanced, more economical, and easier to use.
- Procell Therapies has built upon what PRP has already proven.

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IL-11	IL-9	Wisp-2	TGF- $\beta$ 2	
Ep	IL-12	IL1-RA	IFN $\gamma$	
G-CSF	IL-14	IL18-RA	FGF-b	
C-C	IL-15	TNF $\alpha$ -RA	FGF-a	
TNF- $\alpha$		TGF- $\beta$ 3	IGF-1	
		HGF	KGF	
			EGF	

Cytokines & Related Factors in Healing & Regeneration