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Use and experience of stem cells in regenerative medicine

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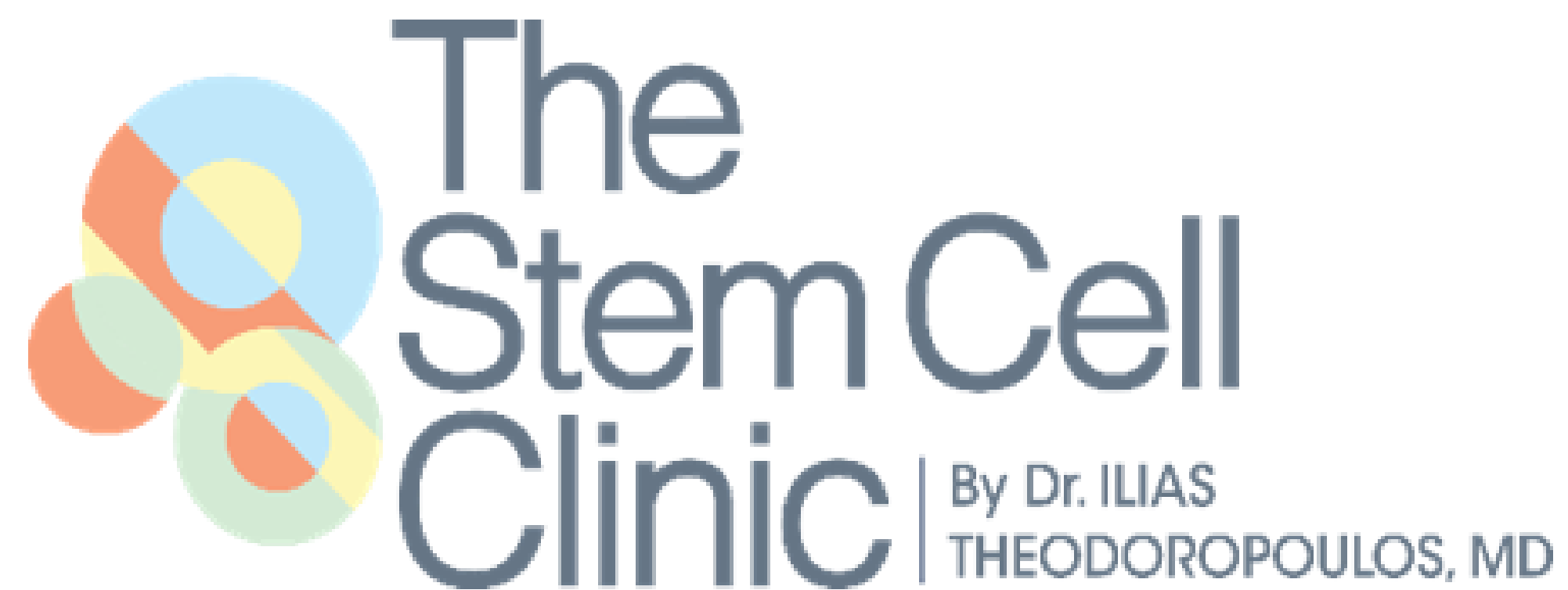


Sec. Técnica:



CD34+ Stem Cells Therapy with MIRACELL: A Revolutionary Approach to Regeneration and Healing

Harnessing the Power of Stem Cells for Effective Therapy.



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Introduction to CD34+ Stem Cell Therapy

- A. CD34+ is a transmembrane glycoprotein primarily used as a marker for identifying and isolating hematopoietic stem cells (HSCs) and other progenitor cells.
- B. Chemotaxis guides CD34+ cells to the sites of damaged tissues.
- C. These cells have regenerative potential, contributing to tissue repair and angiogenesis in various organs.

Cell Type	Differentiation Potential
Hematopoietic stem/progenitor cells	Hematopoietic cells, Hepatocytes, Cardiomyocytes
Multipotent stromal cells (MSCs)	Adipocytes, Chondrocytes, Myocytes, Osteoblasts, Angiogenic
Muscle stem cells	Myocytes, Adipocytes, Chondrocytes, Osteoblasts
Fibrocytes	Fibroblasts, Adipocytes, Osteogenic, Osteoblasts
Endothelial cells	Angiogenesis
Interstitial cells	Unknown

Source: CD34—Structure, Functions and Relationship with Cancer Stem Cells, Radu et al, Medicina 2023, 59, 938

D. CD34+ Cells in Blood vs. Bone Marrow

CD34+ cells	Blood	Bone Marrow
Original sample	1.84 cells/μL	68.67 ± 33.14 cells/μL
post-MIRACELL	11.22 ± 4.7 cells/μL	329.96 ± 179.82 cells/μL

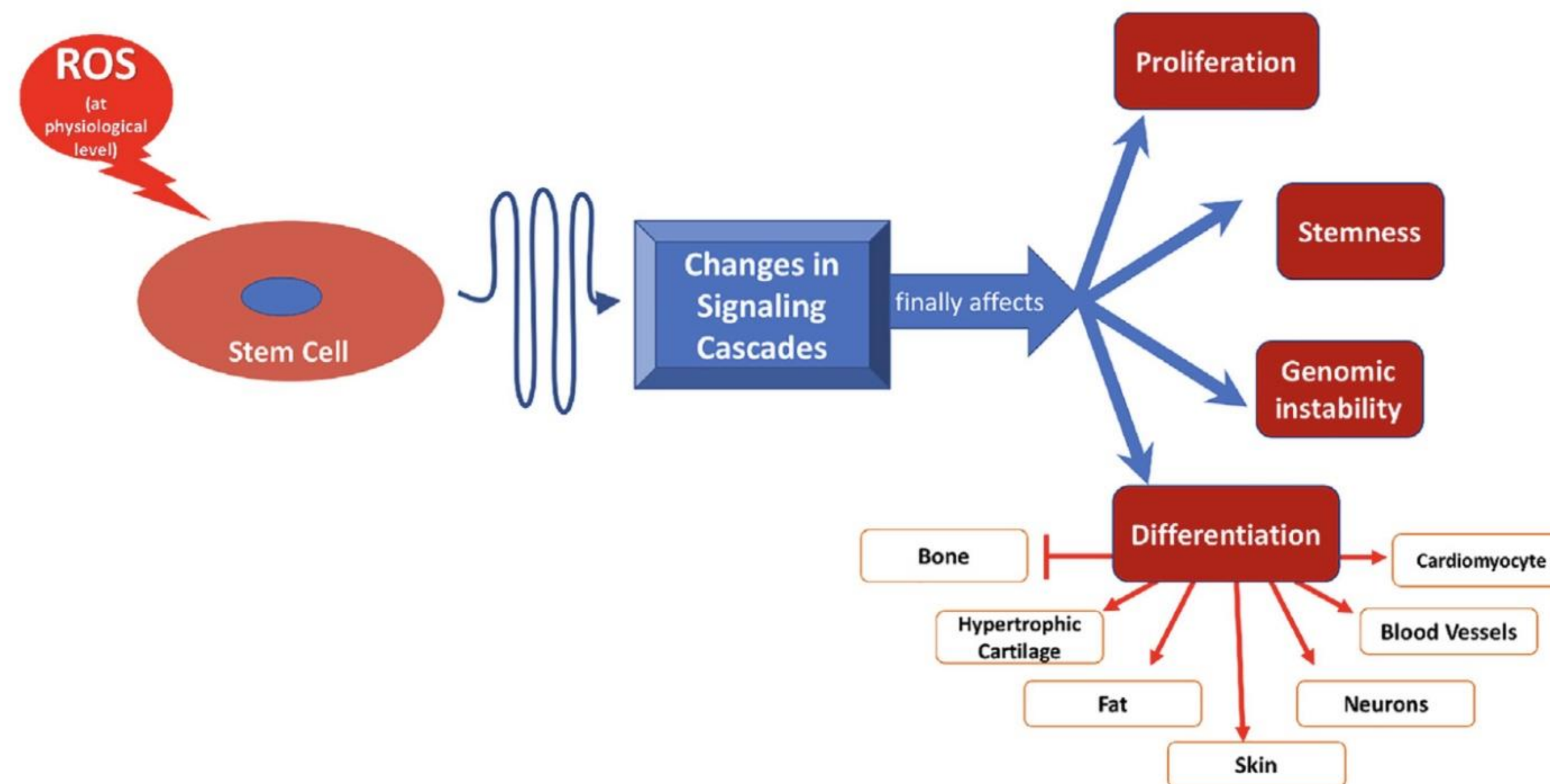
The number of CD34+ cells significantly increases in both blood and bone marrow after the MIRACELL process. The concentration in blood post-MIRACELL is much higher, indicating that blood is an exceptionally efficient source for harvesting CD34+ cells using this process.

Sources: Comparative analysis from the studies provided by Bundang Seoul National University Hospital (2020) and A Basic Clinical Study on the Validity Assessment Indicators of Domestic Development M-CELL2 Regenerative Medical Devices, GBSA Gyeonggi-do Economic and Scientific Promotion Agency, 2021.

CD34+ Cell Extraction and Regulation of Reactive Oxygen Species (ROS) in SMART M-CELL Device

The SMART M-CELL 2 device leverages Reactive Oxygen Species (ROS) to first enhance the proliferation of CD34+ stem cells and then promote their differentiation.

ROS within a physiological range influences various cell signaling pathways that maintain stem cell potency and drive differentiation. This regulation occurs through the use of light wavelengths and computerized time patterns within the device, controlling ROS levels to optimize both proliferation and differentiation phases.



Graph source: *Two Faces of the Coin: Minireview for Dissecting the Role of Reactive Oxygen Species in Stem Cell Potency and Lineage Commitment*, Nugud et al. *Journal of Advanced Research*, 2018.

Wavelengths Used in CD34+ Therapy Programs

Different wavelengths of light are used in each program to enhance the effects of CD34+ stem cell therapy. Each wavelength is optimized for specific therapeutic effects, enhancing the body’s regenerative processes.

Program	Wavelength (nm)	Effect
Blue	460nm – 475nm	Natural purification, circulatory support, inhibits skin aging
Green	525nm – 530nm	Enhances immune response, supports liver function, inhibits skin pigment
Yellow	586nm – 590nm	Improves lymphatic and blood circulation, supports circulatory system and anti-aging
Red	660nm	Promotes cell growth, collagen formation, used in orthopedic and lifting procedures

MIRACELL and The Stem Cell Clinic by Dr. Ilias Theodoropoulos, MD

Clinical Success of CD34+ Stem Cell Therapy and Holistic Protocols

Combining Cutting-Edge Regenerative Medicine with Integrative Approaches.

Study Overview: Period, Participants, and Therapies

- Study Period: From 9/2/23 to 3/9/24
- Total Therapies: 340 therapies conducted
- Total Patients: 136 patients treated
- Women: 145
- Men: 91

Programs Attended

- **Green Program:** 107 therapies
- **Red Program:** 109 therapies
- **Yellow Program:** 67 therapies
- **Blue Program:** 43 therapies

All patients were treated using complementary and alternative treatments alongside conventional therapies, verified by laboratory tests. Retrospective analysis.

Green Program – Liver Therapy & Immune System Enhancement

- 60.75% repeat rate, indicating that chronic conditions like **fatty liver** and **immune dysfunction** require multiple sessions for improvement.
- 1.65 average repetitions per patient, showing the need for follow-up to achieve / maintain results.
- Patients continued their conventional therapies while benefiting from stem cell and holistic treatments.
- Fatty liver ALT (SGOT, mg/dl) descriptive statistics and paired t-test results 6-12 months later.

Statistic	Before	6 Months Later
Count	19	19
Mean	68.68	33.37
SD	20.87	20.94
Minimum	39	11
Maximum	114	96
T-statistic: 10.85		
P-value: 2.49e-09		

- Total NK cells (cells/mm³) descriptive statistics and paired t-test results 6-12 months later.

Statistic	Before	6 Months Later
Count	12	12
Mean	80.92	178.50
SD	43.89	59.84
Minimum	18	107
Maximum	152	312
T-statistic: -4.67		
P-value: 0.00068		

Red Program: Orthopedic Treatments & Osteoporosis Care

- 61.47% repeat rate for patients treated for **orthopedic** issues, including **osteoporosis**.
- 1.63 average repetitions per patient across the program.
- Patients showed significant improvements in T and Z scores for osteoporosis, pain relief in osteoarthritis.
- Follow-up treatments and holistic protocols enhanced bone health and mobility.
- Right femoral neck T-score descriptive statistics and paired t-test results 12 months later.

Statistic	Before	12 Months Later
Count	7	7
Mean	-2.44	-2.20
SD	0.58	0.52
Minimum	-3.4	-2.9
Maximum	-1.7	-1.4
T-statistic: -2.63		
P-value: 0.0389		

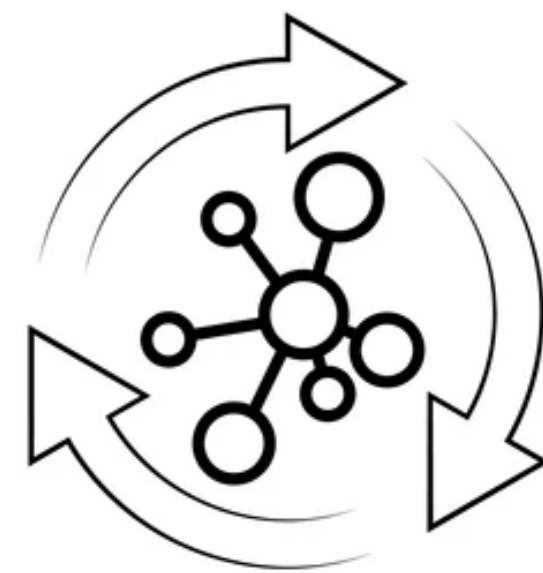
Yellow Program – Coronary Heart & Vascular Diseases

- 67.16% repeat rate for treating coronary heart and vascular diseases.
- 1.49 average repetitions per patient, indicating efficient treatment but requiring maintenance for long-term cardiovascular health.
- The treatments boosted recovery, especially in managing NT-proBNP levels.
- NT-proBNP levels (pg/mL) descriptive statistics and paired t-test results 6-12 months later.

Statistic	Before	6-12 Months Later
Count	8	8
Mean	548.38	324.75
SD	230.14	142.31
Minimum	215	120
Maximum	891	500
T-statistics: 4.00		
P-value: 0.0052		

Regeneration and Preventive Wellness

- 48.84% repeat rate, showing that many patients achieved their desired outcomes efficiently.
- However, those who repeated required 2.05 average repetitions, the highest across programs.
- Patients seeking wellness and preventive care benefited from the integrative protocols, which enhanced regenerative effects.
- 2025: Announcing the joint medical practice in Regeneration and Preventive Wellness with Dr. Vera Bounti, MD, Plastic Surgeon and her Clinic.



Integrating Holistic Protocols and Alternative Treatments

- All patients were treated with complementary and alternative protocols in addition to CD34+ stem cell therapy.
- These protocols, combined with conventional treatments, enhanced patient outcomes, with results verified through laboratory tests.
- The holistic approach catered to both the physical and mental well-being of patients.



Objective Measures of Success

- **Green, Red, and Yellow Programs demonstrated tangible clinical and laboratory evidence of treatment success. The Yellow (1.49), Green (1.65) and Red (1.63) Programs reflect the chronic nature of conditions like liver and immune dysfunction, cardiovascular and orthopedic issues, which often require continuous follow-ups. Regular monitoring through clinical and laboratory tests ensures that treatments are adjusted and improved for long-term success.**
- **The Blue Program, while lacking detailed laboratory data, reflects the importance of patient feedback and subjective measures of success. With 2.05 average repetitions per patient, patients opted for more treatments due to the wellness and preventive nature of the program. Patients sought regeneration for overall health rather than treating specific ailments. The Blue Program provides a unique focus on wellness and regeneration, with patients opting for treatments that go beyond measurable results.**
- **The integration of complementary and alternative treatments enhanced the overall outcomes, with all therapies being carefully verified through lab tests. The combination of CD34+ stem cell therapy, conventional treatments, and holistic protocols represents the future of regenerative medicine.**
- **Our Stem Cell Clinic remains a leader in regenerative therapies, delivering safe and effective results for patients through a comprehensive, integrated approach.**