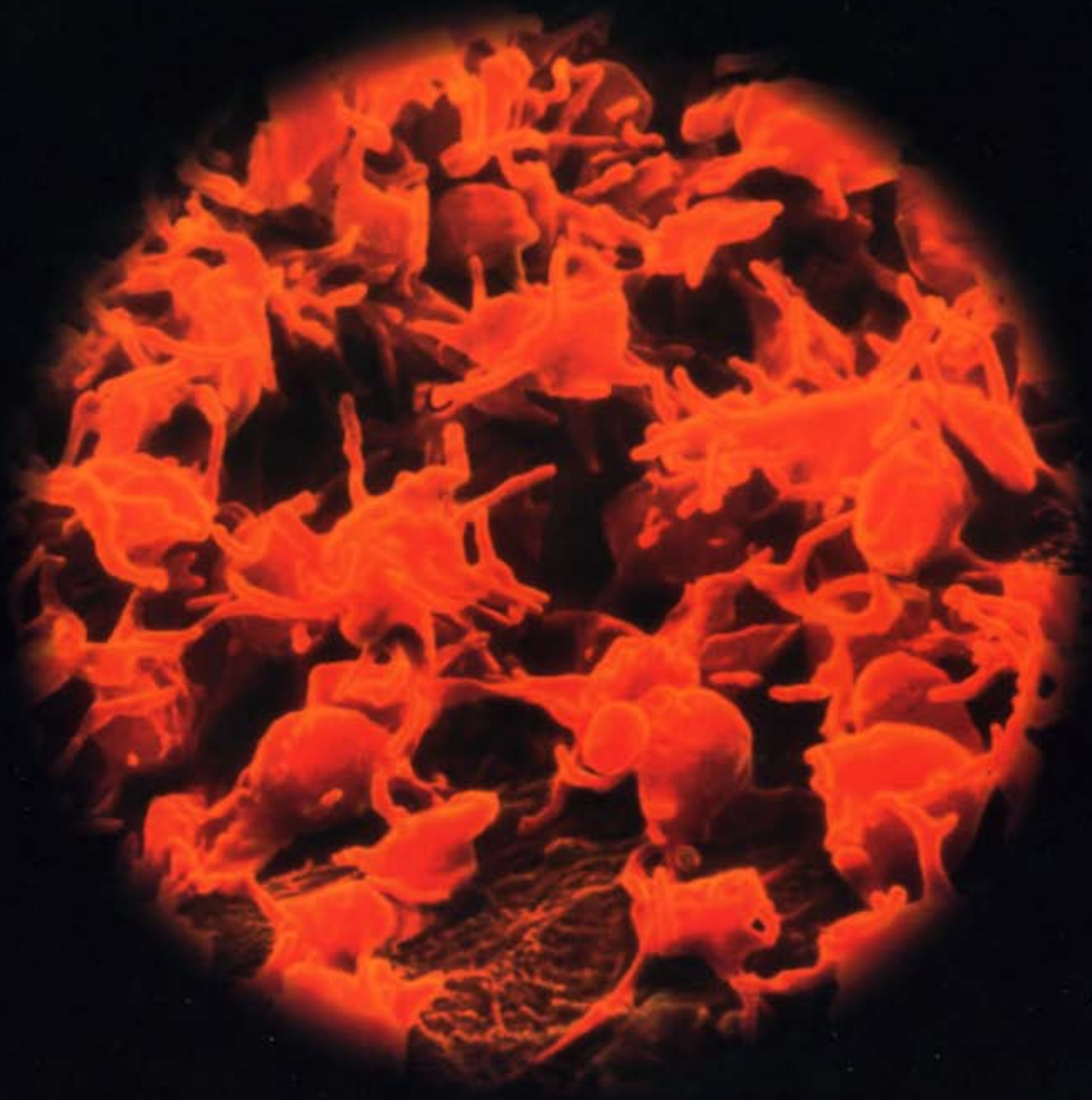
DEVELOPING TECHNOLOGIES FOR
ACCELERATING HEALING, *NATURALLY*®



HARVEST®

SmartPReP® 2

PERFORMANCE

As clinicians, it can be difficult to separate fact from fiction, but at Harvest, the proof is in the product. Unlike other systems, the SmartPReP 2 produces viable platelets increased 4x or greater above baseline levels; the clinical requirement needed to accelerate wound healing.

SmartPReP Platelet Concentration System Performance*

Blood Volume (cc)	Platelet Concentrate Volume (cc)	Platelet Count/µl	Increase Above Baseline Level	Growth Factors Derived from *APC*+ Increase Above Baseline Level			
				PDGF-AB	TGF-ß1	VEGF	EGF
20	3	1,191,000	4.4x	4.4x	4.4x	4.4x	4.4x
60	7	1,758,000	6.6x	6.6x	6.6x	6.6x	6.6x
60	10	1,151,000	4.3x	4.3x	4.3x	4.3x	4.3x

*Data on file

SmartPReP's gentle process cycle recovers approximately 800% more platelets while generating 50% less platelet activation(as measured with p-selectin expression) when compared with data reported for general purpose centrifuges.

PREDICTABILITY

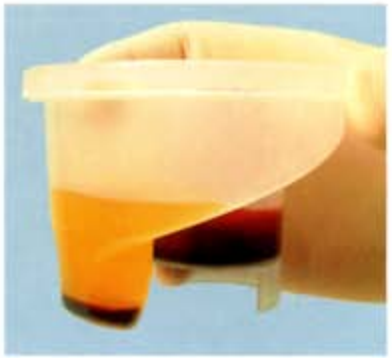
The SmartPReP 2 sets a new standard for producing autologous platelet concentrate enriched with growth factors (*APC*+). The SmartPReP 2 redefines platelet concentrate systems:

- **Technology:** A revolutionary, self-calibrating, floating shelf technology automatically optimizes platelet recovery for every patient
- **Flexibility:** The system can process as little as 20 cc of whole blood for smaller applications in addition to larger volumes when needed
- **Speed:** Produces autologous platelet concentrate in a fraction of the time; less than 15 minutes
- **Confidence:** The SmartPReP system is the first and only system FDA cleared for the preparation of *APC*+ which may help improve the handling characteristics of graft material, facilitate fixation of graft material to the surgical site, and help optimize conditions for healing

RELIABILITY

The SmartPReP 2 simultaneously delivers speed, performance, dependable results and increased confidence by eliminating the guesswork associated with other systems:

- **Automation:** Unique automated dual-spin and decanting process coupled with self-calibrating disposables are significantly easier to use than any of the more complex, time consuming, operator dependent systems
- **Consistency:** The floating shelf technology ensures optimal results independent of patient hematocrit, blood volume processed, or operator
- **Simplicity:** SmartPReP 2's use of state-of-the-art sensors and controls coupled with "Smart" disposables maximize platelet recovery while eliminating operator interaction
- **Simple Logistics:** Eliminates delicate product weighing or multiple manipulations of blood bags or test tubes. Eliminates scheduling of specialized or dedicated technicians



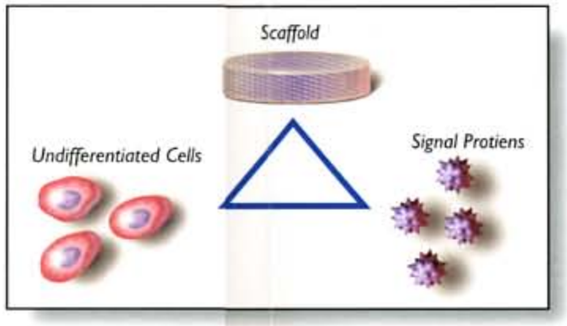
APC+™ The Bioactive Difference

Increasing Bioactivity at the Wound Site

BIOLOGY

The response of living tissue to injury forms the foundation of all surgical practice:

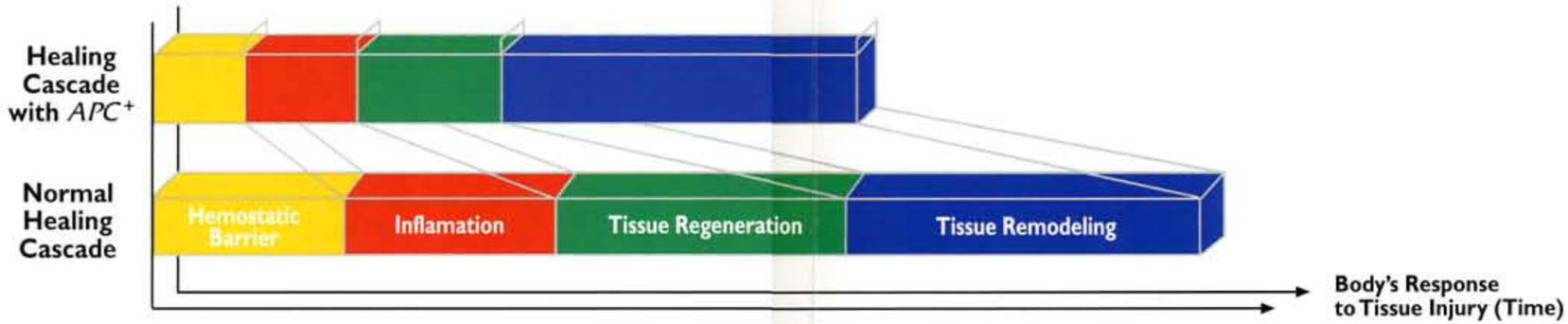
- All surgery results in tissue and cellular damage
- The body's natural response to this injury is a series of regeneration and remodeling steps collectively referred to as the "Healing Cascade"
- The steps are initiated and controlled by bioactive proteins found in platelets, plasma, and white blood cells
- Cellular regeneration, remodeling, and proliferation requires a combination of:
  - *Scaffold (structure or matrix)*
  - *Undifferentiated Cells*
  - *Signal Proteins*
- Increasing the concentration of bioactive proteins acts as a catalyst for accelerating the wound healing process and forms the foundation of tissue engineering



RESEARCH

Most so-called "PRP gels" only contain minimal increases in platelet concentration. Additionally, pooled human plasma derived "fibrin glue" products contain no bioactive proteins. SmartPReP, however, provides the necessary concentrations of platelets, growth factors, and white blood cells vital for initiating and accelerating tissue repair and regeneration:

- Growth factors derived from platelets affect mitogenic activity of osteoblasts and other undifferentiated cells[1]
- At the wound site, the bioactive proteins act on undifferentiated cells with respect to cell recruitment (chemoattraction) and cell division (mitosis)[2]
- Concentration of platelets well above baseline levels not only increases the attraction of undifferentiated cells to the wound site but also proliferation of those cells[3]
- The enhanced cellular proliferation resulting from high platelet concentrations can even allow for a reduction in autograft requirements as well as accelerate bone and soft tissue healing [4,5,6]

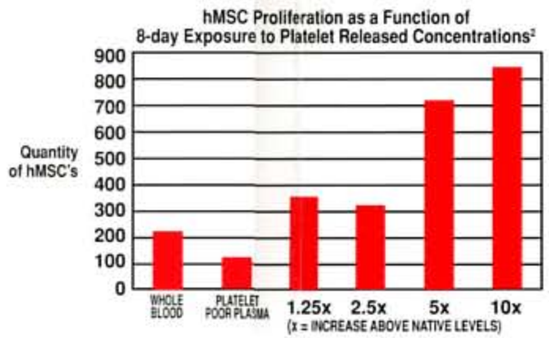


Platelet Concentrates Are NOT Created Equal

QUALITY

The method used for concentrating platelets has a direct impact on the bioactive proteins available to accelerate the wound healing process:

- In order to deliver the protein load necessary to achieve a bioactive matrix, the platelets and corresponding growth factors must be concentrated in such a way as to leave them viable and functionally similar to the ones found in the circulatory system
- The method used to prepare platelet concentrate dramatically affects its effectiveness
- Current research indicates that acceleration of the wound healing process requires viable platelet concentrations of 4x to 5x above baseline [5,6]
- Enhanced cellular proliferation resulting from high platelet concentrations can even allow for a reduction in autograft requirements as well as accelerate bone and soft tissue healing [4,5,6]
- An exponential increase in undifferentiated cell proliferation occurs as platelet concentrations increase from 2.5x to 5x to 10x above baseline levels [1,2]



SMARTPREP APC+™

Platelets concentrated with the SmartPReP system:

- Have characteristics similar to the requirements of the American Association of Blood Banks for transfusable platelets [7]
- Release bioactive signal proteins and growth factors that remain active for up to 7 days [7]
- Were concentrated significantly higher than other so-called "PRP" systems [8,9]
- Met or exceeded the 4x to 5x increase above baseline levels needed to enhance wound healing [5,6]

1. Slater, Michael, et al, Involvement of Platelets in Stimulating Osteogenic Activity, *Journal of Orthopaedics Research*, 1995: 13: 655-663.
2. Haynesworth, Stephen, E., Bruder, Scott P., et al, Mitogenic Stimulation of Human Mesenchymal Stem Cells by Platelet Releasate. Poster Presentation, American Academy of Orthopedic Surgery, March 2001.
3. Kirmer, R., Eaglstein, W.H., The Wound Healing Process, *Wound Healing*, 1993; 11:629-640.
4. Patel, T. et al, The use of Platelet Concentrate in Posterolateral Fusion Biomechanical and Histological Analysis. Presented at the 28th meeting of the International Society for the Study of Lumbar Spine, Edinburgh, Scotland, June 2001.
5. Marx, R.E. et al, Platelet-Rich Growth Factor Enhancement for Bone Grafts, *Oral Surg Oral Med, Oral Pathol*, 1998;85:638-646.
6. Marx, R.E., et al, Healing Enhancement of Skin Donor Sites with Platelet-Rich Plasma, Oral Abstract Session, American Academy of Oral & Maxillofacial Surgery, September, 2000.
7. Kevy, S.V., Characterization of Growth Factor Levels in Platelet Concentrates, Presented at Engineering Tissues, 5th Annual Meeting, February, 2001.
8. Marx, R.E., University of Miami School of Medicine, Miami, FL, Kevy, S.V., Jacobson, M.S., Center for Blood Research Laboratories, Boston, MA, Platelet Concentrate Preparation in the Office Setting: A Comparison of Manual and Automated Devices, September, 2001.
9. Kevy, S.V., Jacobson, M.S., Platelet Concentrate Preparation in the Office Setting: A comparison of Manual and Automated Devices, March, 2001.

The Next Generation

APC+™ PROCEDURE PACKS

We have taken the hassle out of producing platelet concentrate. The *APC*+ series Procedure Packs:

- Include the new self-calibrating floating shelf technology to ensure reproducible and predictable results patient to patient
- Offer three different disposable options based on your needs
  - The APC-20 provides 3 ml of *APC*+ for small applications
  - The APC-60 provides 5 – 10 ml of *APC*+ for medium applications
  - The APC-120 provides 10 – 20 ml of *APC*+ for large applications
- Yield both Autologous Platelet Concentrate (*APC*+) and Platelet Poor Plasma (PPP)
- Provide all the components needed to make *APC*+ in one convenient kit; including anticoagulant, I.V. site prep kit, and color coded sterile field transfer cups
- Come packaged sterile and sealed for security

SMARTJET APPLICATOR SYSTEMS

The SmartJet applicator system eliminates the guesswork when applying platelet concentrate. The SmartJet:

- Is FDA cleared for the simultaneous pre-mixing and delivery of *APC*+ and thrombin to the surgical site
- Applies a fine bioactive coating (spray system) or precision delivery (liquid system) of bioactive proteins to the wound site
- Precisely controls mixing of *APC*+ and thrombin (10:1 ratio) to ensure reproducible results
- Requires only single-handed operation for easy manipulation
- Utilizes a dual lumen design to help prevent clogging at the delivery tip
- Comes packaged sterile and assembles in seconds

IMPROVING PATIENT OUTCOMES

"The use of growth factors from PRP added to bone grafts produces a quantifiably enhanced result in comparison to grafts performed without its use."
Robert E. Marx, DDS, OMF Surgeon, Arun K. Garg, DMD, University of Miami , FL

"In addition to producing more consistent and measurably higher platelet counts, we found the SmartPReP greatly simplified production of PRP when compared with general purpose centrifuges."
Craig M. Misch, DDS, OMF Surgeon, Sarasota, FL

"We have evaluated all the techniques and systems available for obtaining PRP. We found SmartPReP the simplest-to-use and easiest to implement PRP system for the private practice environment."
Michael A. Pikos, DDS, OMF Surgeon, Palm Harbor FL

"PRP is not only an economically viable method for accelerating patient healing, but also an effective practice building tool."
Paul S. Petrungaro, DDS, Periodontist, Stillwater, MN

"The application of platelet concentrate on chronic wounds improves granulation tissue and enhances epithelialization, potentially increasing limb salvage rates and reducing healthcare costs."
James B. Knox, MD, Vascular Surgeon, Falmouth, MA

"Autologous platelet gel significantly reduces intraoperative bleeding and oozing , minimizes bruising, decreases pain, speeds healing, and hastens reepithelialization in skin resurfacing procedures."
Ross A. Clevens, MD, Facial Plastic & Reconstructive Surgeon, Melbourne, FL

"Platelet concentrate is a useful adjunct to endoscopic sinus surgery, it reduces post-operative bleeding complications and accelerates mucosalization without inducing synechiae formation."
Marc M. Kerner, MD, FACS, ENT & Facial Plastic Surgeon, Encino, CA

"Autologous platelet gels not only provide adhesive and hemostatic properties, but supply the wound valuable growth factors that enhance and promote the healing process."
Stephen C. Adler, MD, Facial Plastic & Reconstructive Surgeon, Stuart, FL

"The use of growth factors from PRP on soft tissue healing is rapid and obvious. When using PRP, our patients experienced greater post-op comfort, reduction in pain medications and fewer post-op office visits."
David E. Wilson, MD, ENT Surgeon, Indianapolis, IN

ORDERING INFORMATION

Product Code No.	Product Description	Product Code No.	Product Description
SMP-2	**SmartPReP 2 Platelet Concentrate System** 110V- 50/60 Hz.	BW-20	**Reusable Counter Balance Weight for SmartPReP 2** For use with the APC-20 procedure pack. 1/each.
SMP-2i	**SmartPReP 2 Platelet Concentrate System** 240V- 50/60 Hz.	BW-60	**Reusable Counter Balance Weight for SmartPReP 2** For use with the APC-60 procedure pack. 1/each.
APC-20	*APC*$^+$ **Procedure Pack for SmartPReP 2** Includes components for 3ml *APC*$^+$. 6/case.	LK/2	**SmartJet Liquid Applicator Kit** Liquid delivery system. 6/case.
APC-60	*APC*$^+$ **Procedure Pack for SmartPReP 2** Includes components for 5-10ml *APC*$^+$. 3/case.	SK/S	**SmartJet Spray Applicator Kit** Spray delivery system. 6/case.
APC-120	*APC*$^+$ **Procedure Pack for SmartPReP 2** Includes components for 10-20ml *APC*$^+$. 2/case.	WS-2	**SmartPReP 2** *APC*$^+$ **Workstation** 1/each.

The SmartPReP® Platelet Concentration System is manufactured by Harvest Technologies, Plymouth, MA and is distributed in the US and Canada by Terumo Cardiovascular Systems Corporation, Ann Arbor, MI.

TERUMO®

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