



REGEN LAB

TECHNOLOGY BROCHURE

Medical Devices class IIb

SWISS R&D AND MANUFACTURER IN BIOTECHNOLOGY

Regen Lab is recognised as the leading provider of a patented technology to produce Autologous Platelet Rich Plasma (A-PRP). The technology processes the patient's own blood, to use the platelets, cells and proteins for indications in various medical disciplines such as sports medicine, wound care and aesthetics. A-PRP is also used in combination with freshly extracted cells (bone marrow, adipose tissue, skin cells, ...)



Regen Lab confidential

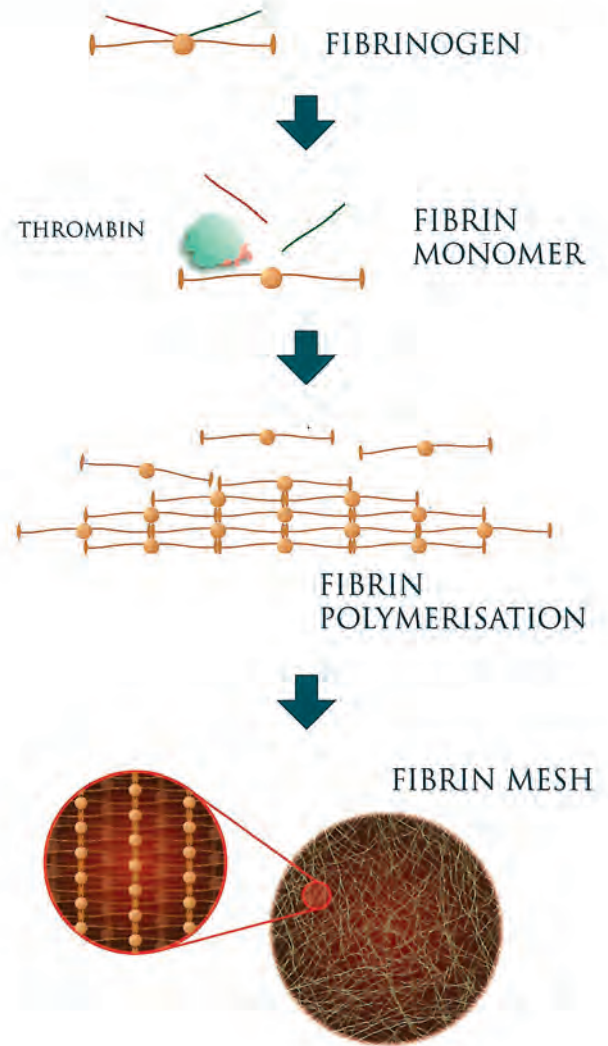
A-PRP BIOLOGY

A-PRP

Platelets are key actors of hard and soft tissue repair mechanisms. They provide the essential growth factors (FGF, PDGF, TGF- β , EGF, VEGF, IGF) involved in:

- Stem cell migration, differentiation and proliferation.
- Stimulation of cells such as fibroblasts and endothelial cells, to induce new extracellular matrix deposition and neo-vascularization.

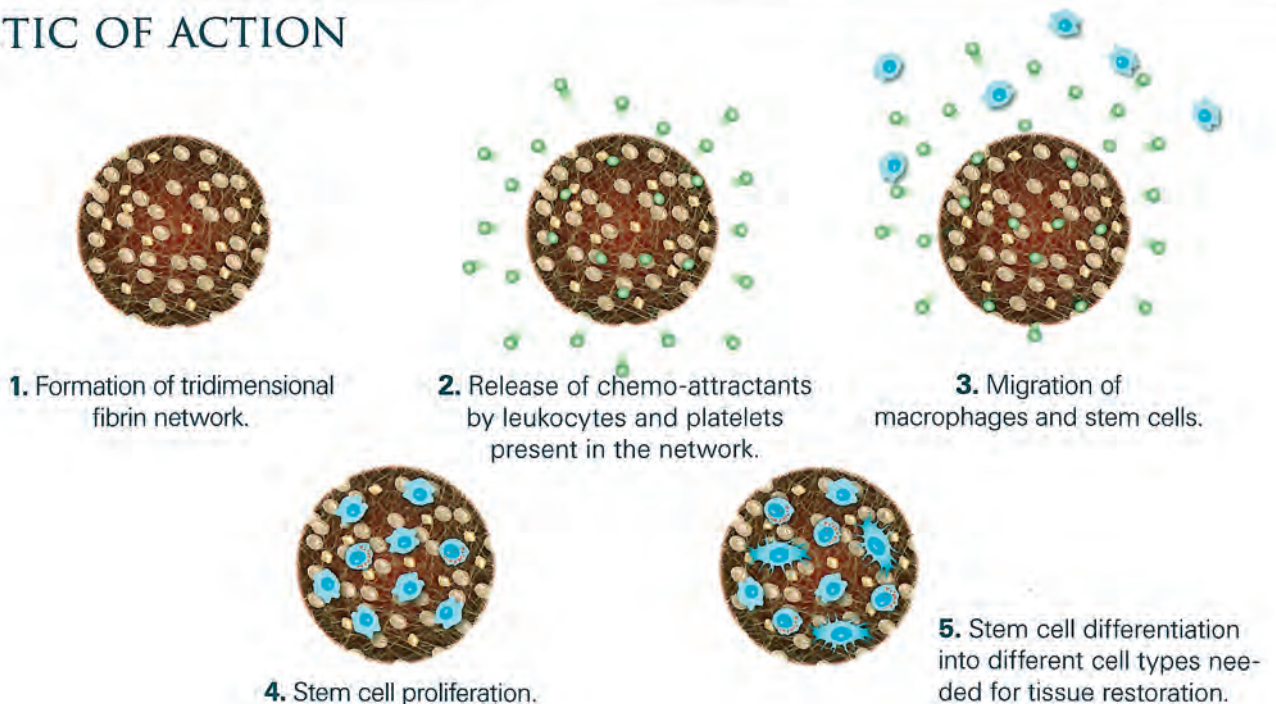
Plasma contains many factors essential for cell survival such as nutriment, vitamins, hormones, electrolytes and proteins. Among the plasma proteins, there are the essential molecules for the coagulation process and generation of the fibrin polymer that will serve as a scaffold for cell migration, differentiation and proliferation.



GEL FORMATION

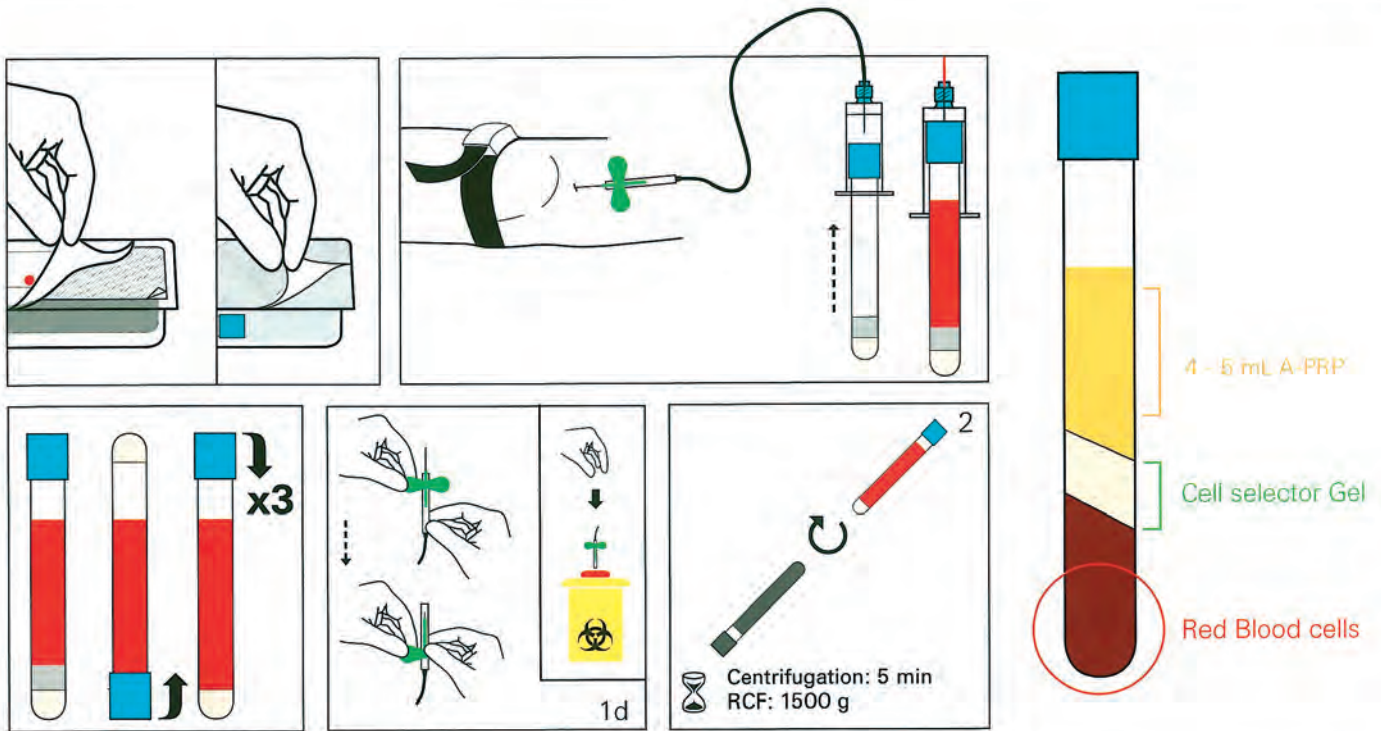
Upon the action of thrombin enzyme, plasma soluble fibrinogen macromolecules are converted into fibrin monomers that will polymerize in bundle and then in a tri-dimensional network.

KINETIC OF ACTION



REGEN LAB TECHNOLOGY

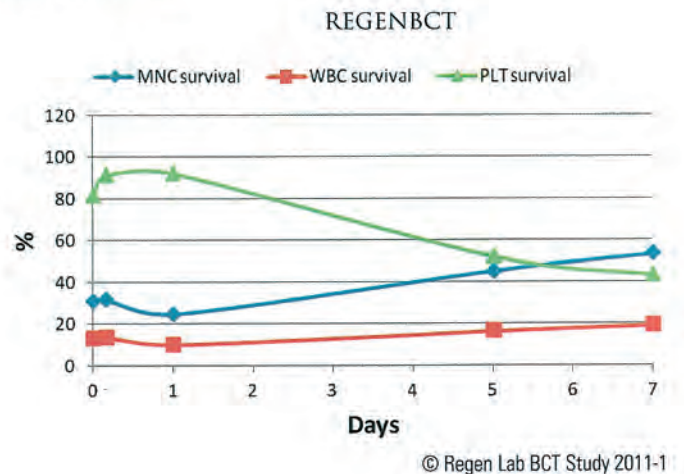
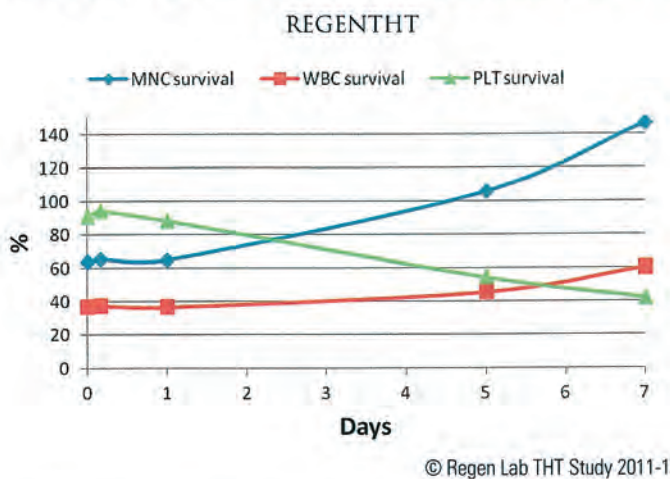
THE SIMPLE, SAFE AND EFFICIENT POINT OF CARE PREPARATION OF A-PRP.



PROPERTIES

	BLOOD SAMPLE VOL PER TUBE	PRP VOL PER TUBE	PLATELET RECOVERY	RED BLOOD CELL DEPLETION	PLATELET CONCENTRATION FACTOR (NATIVE)
REGENTHT TUBE	8 ml	4 to 5 ml	~ 95 %	> 99%	1.7 X
REGENBCT TUBE	8 ml	4 to 5 ml	> 80 %	> 99.7 %	1.6 X

CELL SURVIVAL IN VITRO AT ROOM TEMPERATURE



Fifty percent of platelets (PLT) are still alive after five days.
 The monuclear cell (MNC) growth demonstrates that plasma is an excellent cell culture media.

A-PRP PREPARATIONS



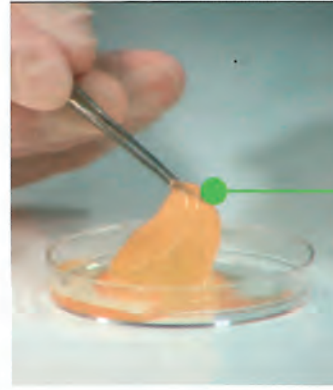
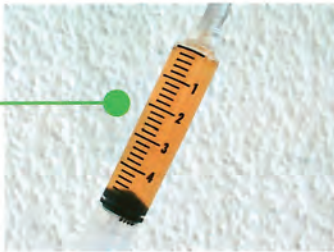
PLATELET GEL FOR HAEMOSTASIS OR BIOLOGIC GLUE

Addition of Calcium / Autologous Trombine (ATS)

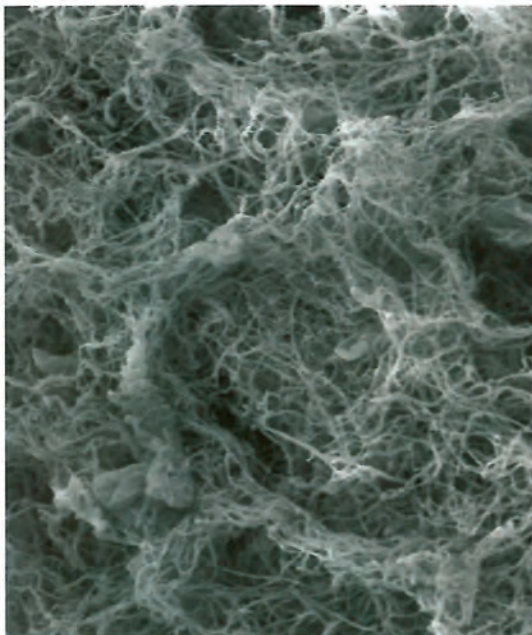
SUTURABLE MEMBRANE:

Addition of Calcium / Autologous Trombine + Second centrifugation

A-PRP LIQUID: Ready to inject



CLINICAL USE EXEMPLES



BIOLOGICAL GLUE



CELLS IN AUTOLOGOUS MEMBRANE

ERGONOMICS AND VERSATILITY

Regen Lab has designed a wide range of products to get closer to the end user's needs. The product lines are adapted to different indications for the private clinic and the hospital.

FIELDS OF APPLICATION

ORTHOPAEDICS

SPORT MEDICINE

AESTHETICS

WOUND HEALING

ODONTOLOGY

SURGERY

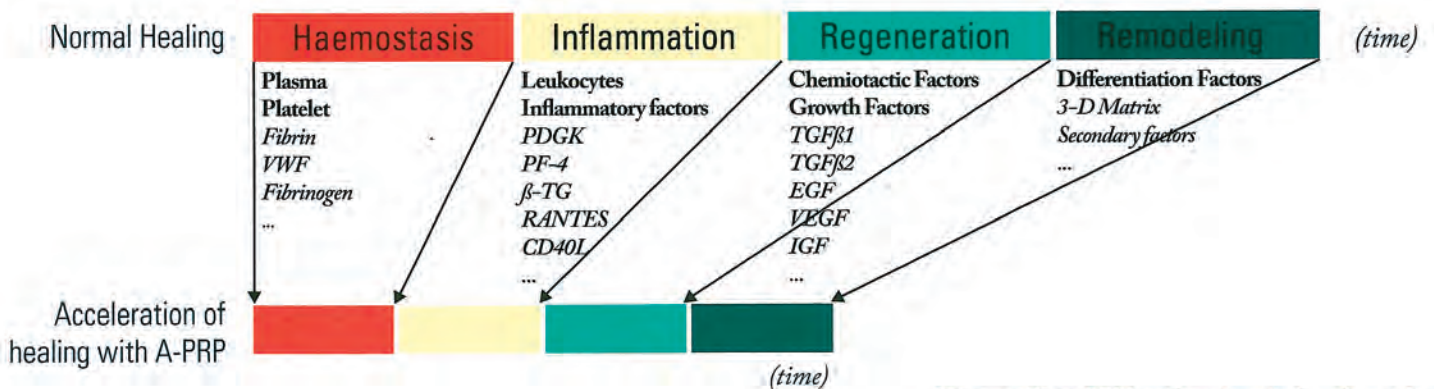
PLASTIC SURGERY

CARDIOVASCULAR
SURGERY

NEUROSURGERY

MAXILLOFACIAL
SURGERY

ILLUSTRATION OF A-PRP'S BENEFITS IN THE HEALING CASCADE



***From 40 to 50% reduction in healing time**

*R. Marx - 2000 (USA)

*W. Raffoul CHUV 2005 (Suisse)

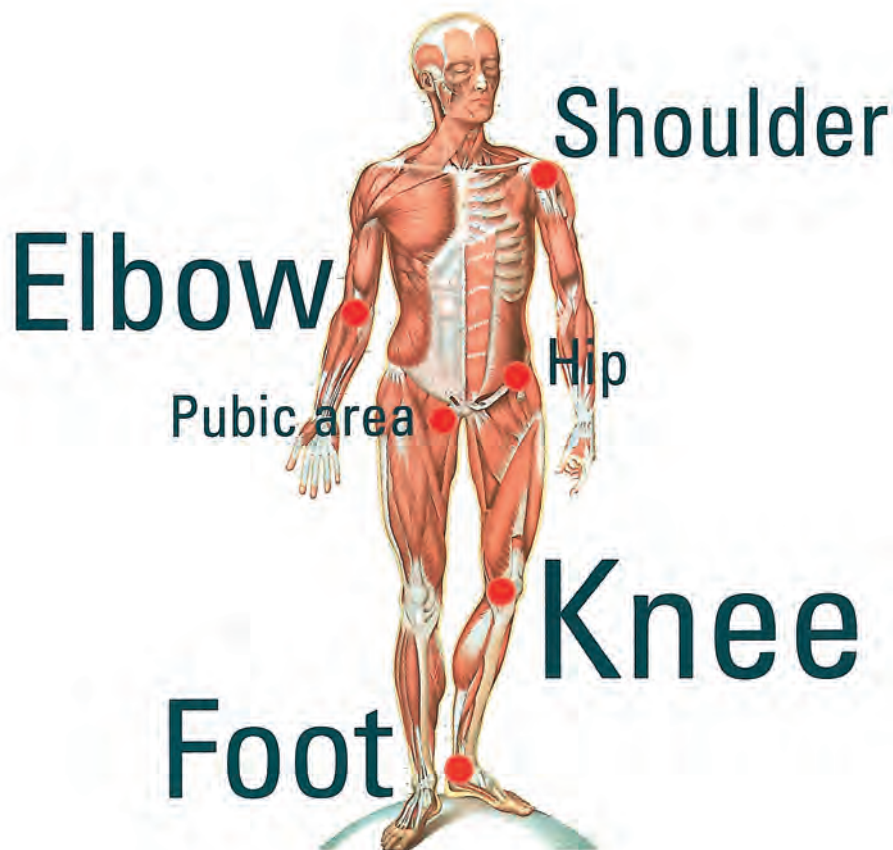
KEY POINTS

- Autologous therefore non immunogenic
- Release of the main growth factors involved in tissue repair and regeneration
- Reduced risk of infections
- Improvement of microvascularization
- Stimulation of mesenchymal stem cells
- Stimulation of fibroblasts growth and collagen production
- Acceleration of healing process, reduction of pain and hospitalization time

ORTHOPAEDICS & SPORT MEDICINE

Injection of Autologous Platelet-Rich Plasma (A-PRP) from RegenKit

- Promotes and accelerates the healing process providing significant improvement in symptoms
- Significantly reduction of pain
- Reduces the need for alternative treatments like medications, cortisone injections, surgery etc.
- Rules out the risk of immunological reactions and contamination by transmissible diseases



APPLICATIONS:

- Tendinous, ligamentous & muscular lesions
- Plantar fasciitis
- Cartilage lesions (optionally associated to synthetic tri-dimensional matrix)

Combined with Autologous Thrombin Serum (ATS) to form autologous biological glue for

- Prosthetic implant bio integration
- Bone reconstruction (eventually in combination with bone substitute and / or bone marrow stem cells)

REFERENCES:

- Gobbi, A., G. Karnatzikos, et al. (2012). «Platelet-Rich Plasma Treatment in Symptomatic Patients With Knee Osteoarthritis: Preliminary Results in a Group of Active Patients.» *Sports Health: A Multidisciplinary Approach* March(4): 162-172.
- Le Coz, J. (2011). «Twenty-two elbows tendonitis treated with platelets rich plasma after failure with the usual treatment.» *Journal de Traumatologie du Sport* 28(2): 83-89. Article in French

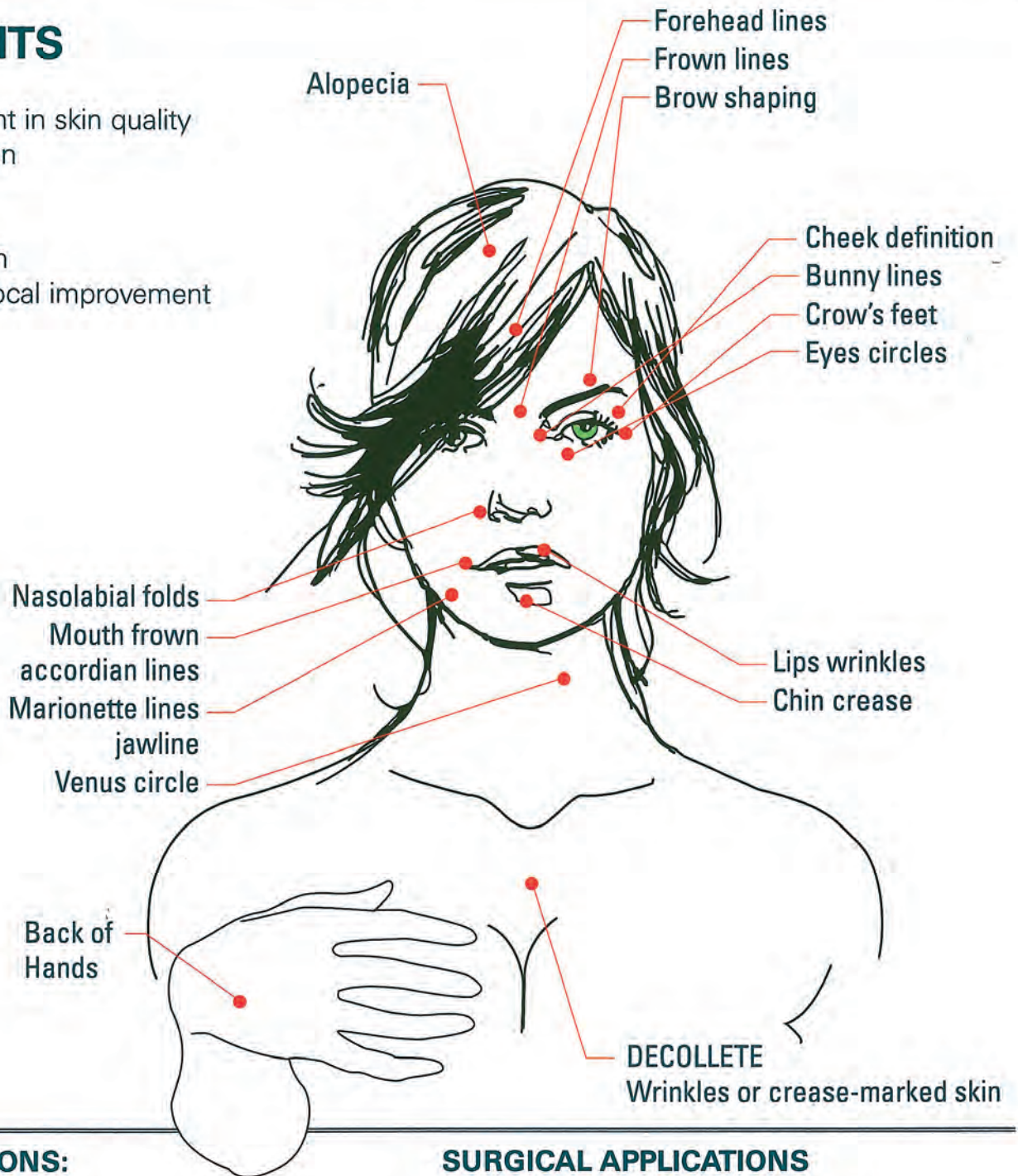
AESTHETICS / PLASTIC SURGERY

BENEFITS

Improvement in skin quality

- Complexion
- color
- texture
- hydratation

& specific local improvement



APPLICATIONS:

- Fine lines
- Deep wrinkles
- Dark circles
- Alopecia
- In combination with laser or chemical peel treatments

SURGICAL APPLICATIONS

- Combined with ATS to obtain an Autologous Biological Glue
- Combined with fat tissue for volume correction

REFERENCES:

Redaelli (2010). «Face and Neck Revitalization With Platelet-rich Plasma.» *Journal of Drugs in Dermatology* 9(5) : 466-472.
Farrior, E. and K. Ladner (2011). «Platelet gels and hemostasis in facial plastic surgery.» *Facial Plast Surg* 27(4): 308-314.

Cervelli, V., F. Nicoli, et al. (2012). «Treatment of traumatic scars using fat grafts mixed with platelet-rich plasma, and resurfacing of skin with the 1540 nm nonablative laser.» *Clin Exp Dermatol* 37(1): 55-61.

OPHTHALMOLOGY:

DRY EYE SYNDROME

Dry eye is a condition which consists in a quantitative reduction and / or qualitative alteration of the tear film, which mainly has a moistening function for ocular surface. This condition can be harmful because it can cause injury to the external eye: tear film tends to 'break up', with consequent exposure to dehydration of the corneal epithelium and anterior palpebral conjunctiva. The Autologous Platelet Rich Plasma (A-PRP) used as eyedrops permit the simulation of artificial tears, with lubricating, cleansing and antiseptic functions.

CORNEAL ULCER

The corneal ulcer is a lesion caused by an infectious process of the cornea. The use of PRP for the treatment of this condition favors the decrease of pain symptoms, inflammatory state and promotes the regeneration of the tissue itself.

clinical study in progress: Comparative study of efficacy and safety between A-PRP and artificial tears in patients affected by dry eye syndrom. Dr. Vctor García Conca, Hospital Universitaire de San Juan, Alicante, Spain.

REFERENCES:

Alio, J. L., M. Abad, et al. (2007). «Use of autologous platelet-rich plasma in the treatment of dormant corneal ulcers.» *Ophthalmology* 114(7): 1286-1293 e1281. Alio, J. L., J. R. Colecha, et al. (2007). «Symptomatic dry eye treatment with autologous platelet-rich plasma.» *Ophthalmic Res* 39(3): 124-129.

WOUND HEALING:

ULCERS

The application of Autologous Platelet Rich Plasma (A-PRP) in gel form is particularly effective in the treatment of ulcers (neuropathic, venous and pressure ulcers), triggering the healing process even in chronic non-responsive wounds. It decreases pain and inflammation and reduces the hospitalization time.

SURGERY WOUNDS, INFECTED WOUNDS, BURNS

Application of activated PRP with Autologous Thrombin Serum (ATS) on surgical wounds helps to shorten the healing time and reduce the risk of hypertrophic scar formation. The risk of infection is reduced and infected thoracic wounds have been successfully treated. A-PRP is also used to treat burns and skin graft donor site.

Clinical study in progress: Etude de l'efficacité du gel plaquettaire autologue obtenu avec RegenKit-BCT dans le traitement des ulcères chroniques neuropathiques du pied chez le diabétique. Dr Sylvaine CLAVEL. Fondation Hôtel-Dieu, Le Creusot, France

REFERENCES:

Cervelli, V., P. Gentile, et al. (2009). «Regenerative surgery: use of fat grafting combined with platelet-rich plasma for chronic lower-extremity ulcers.» *Aesthetic Plast Surg* 33(3): 340-345. Pallua, N., T. Wolter, et al. (2010). «Platelet-rich plasma in burns.» *Burns* 36(1): 4-8. Trowbridge, C. C., A. H. Stammers, et al. (2005). «Use of platelet gel and its effects on infection in cardiac surgery.» *J Extra Corpor Technol* 37(4): 381-386.

OTHER INDICATIONS

ODONTOLOGY

A-PRP has proven to be effective in improving surgical outcome in a variety of procedures in the field of oral and maxillofacial surgery.

VETERINARY

The main applications of A-PRP in veterinary medicine are intra-articular injections, especially on horses, and wound care.

REFERENCES:

Kotsovilis, S., N. Markou, et al. (2010). «The adjunctive use of platelet-rich plasma in the therapy of periodontal intraosseous defects: a systematic review.» *J Periodontal Res* 45(3): 428-443. Maia (2009). «Platelet-Rich Plasma in the Treatment of Induced Tendinopathy in Horses: Histologic Evaluation.» *Journal of Equine Veterinary Science* 29(8).
