

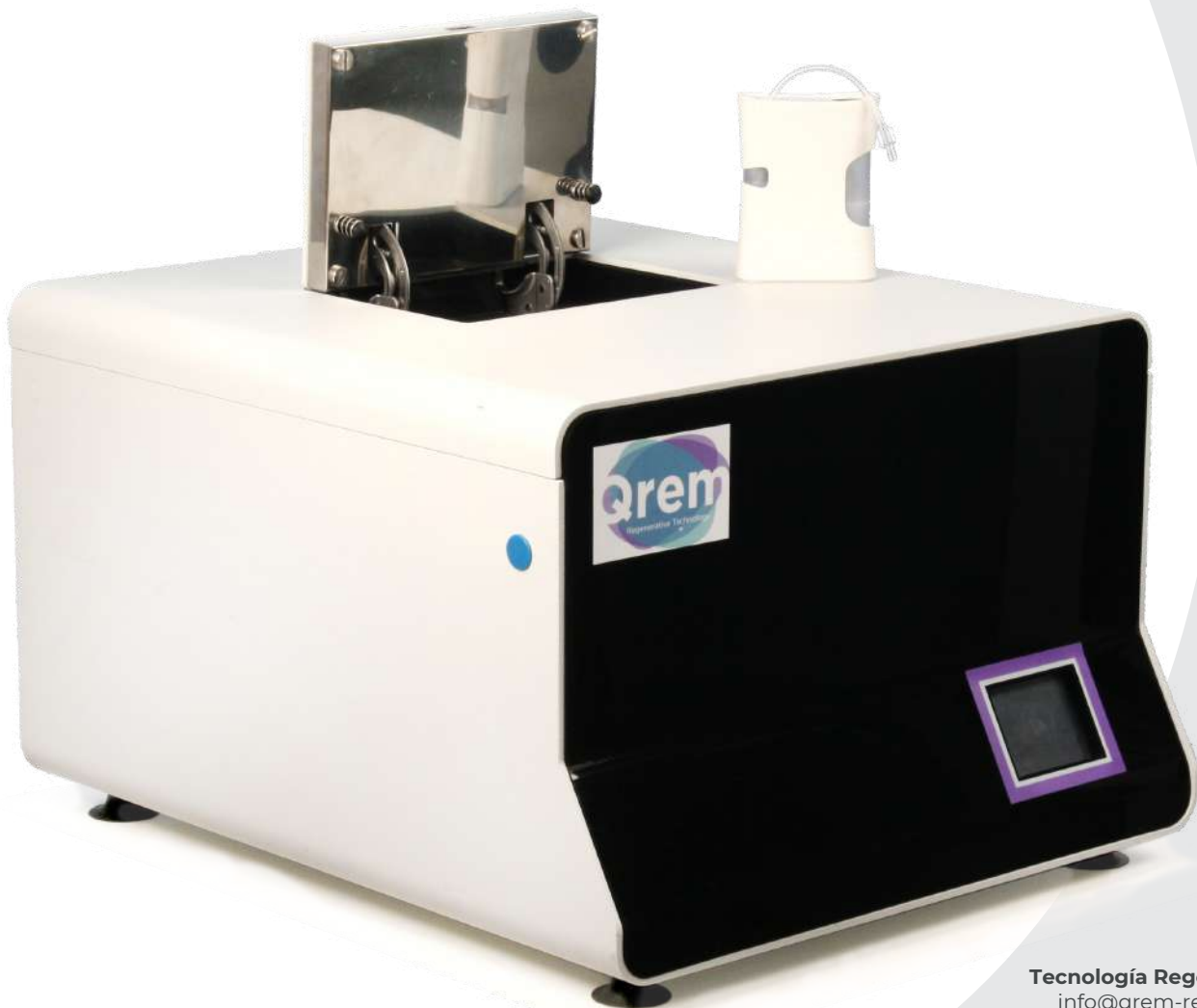


Qrem® Cytokine

Autologous Cytokine Rich Serum

**Innovative technology (Lab-in-a-Box)
to obtain the cytokines involved in
regeneration**

ANOTHER STEP FORWARD IN REGENERATIVE MEDICINE



Tecnología Regenerativa Qrem
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www.qrem-regenerative.com

Qrem[®] Cytokine is a bioengineering system to obtain Autologous Cytokine Rich Serum (ACRS) from the patient's own blood

Perfect for outpatient treatments or in the operating theatre:

- Closed, automatic system that requires no manipulation
- Quick and very easy to use

Greater biological potential:

- ACRS directly contains the active substance, the cytokines and growth factors
- ACRS doesn't contain cells, platelets or fibrinogen

ACRS is a cell-free serum with a balanced concentration of cytokines from plasma, white blood cells and platelets

PLASMA

Qrem[®] Cytokine is able to recover all the IGF-1, a very important factor for collagen synthesis in tendons¹ and for chondrogenesis².

WHITE BLOOD CELLS

Qrem[®] Cytokine activates white blood cells to obtain anti-inflammatory cytokines, such as IL-10 and IL-4, which take part in the balance between M1 (inflammatory) and M2 (anti-inflammatory) macrophages^{3,4}.

PLATELETS

Qrem[®] Cytokine also activates platelets to obtain growth factors (PDGF, VEGF, TGF- β , EGF, FGF and HGF)



ACRS uses the synergistic properties of cytokines to stimulate multiple signalling pathways for endogenous repair^{5, 6}

AUTOLOGOUS CYTOKINE RICH SERUM

Anti-inflammatory activity:
IGF-1, HGF, PDGF, TGF- β , IL-4

Proliferative activity:
IGF-1, TGF- β , IL-4, IL-10, EGF

Polarising activity:
IL-10, IL-4

Healing activity:
IL-10, HGF, FGF, VEGF, TGF- β

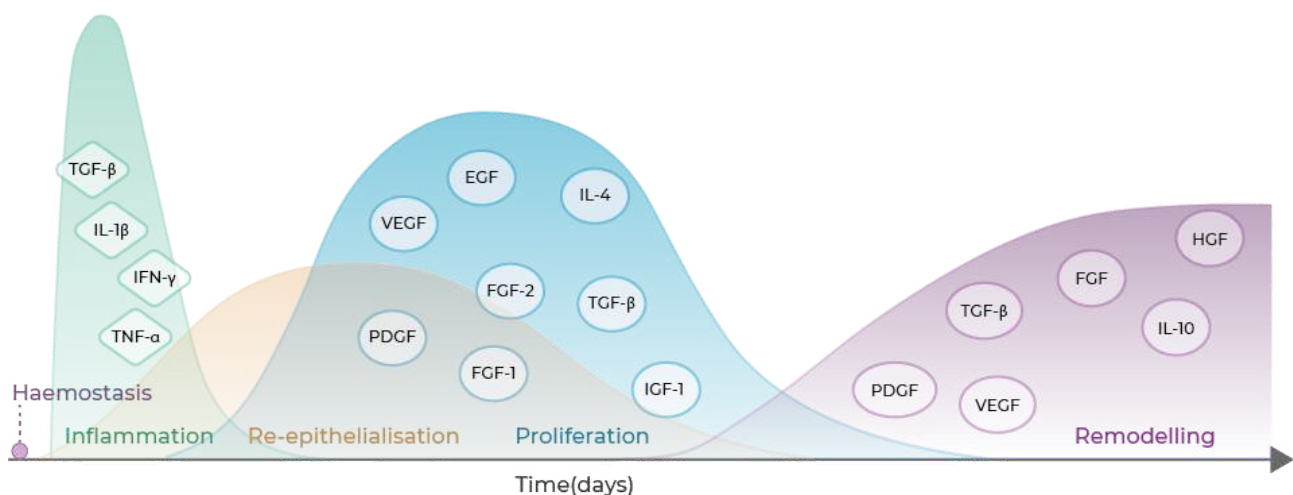
Angiogenic activity:
FGF-1, FGF-2, VEGF

RESIDUAL SECONDARY CLOT

RED BLOOD CELLS



Role of cytokines in the regenerative cycle



How does Qrem® Cytokine work?

Patented process to activate platelets and white blood cells requires no incubation or addition of exogenous calcium.

Scan the QR code to see how it works.



www.qrem-regenerative.com/how-does-qrem-cytokine-work



References

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3. Utomo, L., van Osch, G. J. V. M., Bayon, Y., Verhaar, J. A. N., & Bastiaansen-Jenniskens, Y. M. (2016). Guiding synovial inflammation by macrophage phenotype modulation: an in vitro study towards a therapy for osteoarthritis. *Osteoarthritis and Cartilage*, 24(9), 1629–1638.
4. Xie J, Huang Z, Yu X, Zhou L, Pei F. Clinical implications of macrophage dysfunction in the development of osteoarthritis of the knee. *Cytokine Growth Factor Rev.* 2019 Apr;46:36–44.
5. Seifarth, C., Csaki, C., & Shakibaei, M. (2009). Anabolic actions of IGF-I and TGF- β 1 on interleukin-1 β -treated human articular chondrocytes: Evaluation in two and three dimensional cultures. *Histology and Histopathology*, 24(10), 1245–1262.
6. Fortier, L. A., Barker, J. U., Strauss, E. J., McCarrel, T. M., & Cole, B. J. (2011). The role of growth factors in cartilage repair. *Clinical Orthopaedics and Related Research*, 469(10), 2706–2715.

About Qrem Regenerative Technology

Qrem is a Spanish company founded in 2016 that develops, manufactures and sells medical devices for regenerative medicine.

Our mission is to drive the standardisation and scalability of autologous regenerative therapies, making Lab-in-a-Box bioengineering systems available to physicians so they can deliver therapies in their own offices easily and safely to reach as many patients as possible thanks to their cost-effectiveness.

Learn more about Qrem on:



www.qrem-regenerative.com



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