

## type I collagen effects

### Type I bone collagen

- interacts** with the beta 1 subunit of osteoblast cell surface integrins, thus promoting cell adhesion to graft material;
- acts** as a coactivator needed for the action of morphogenetic proteins (BMPs), thus fostering the stimulating action of endogenous growth factors;
- binds** soluble growth factors by turning them into insoluble factors: therefore, they are protected from proteolysis and their half-life is increased, extending the duration of regenerative stimulation;
- regulates** the access of extracellular factors to new-formed bone crystal, thus physiologically modulating bone mineralization;
- modulates** the transduction of the proliferation and differentiation signal in osteoblastic cells, thus regulating the remodeling process;
- interacts** with the mesenchymal cells stemming from bone marrow, by inducing the adhesion, the proliferation and the differentiation in osteoblasts;
- promotes** bone regeneration whenever grafted in case of bone defects, having a direct action of regeneration promotion;
- stimulates** the expression of gene coding for BMP type II receptor, thus making cells more sensitive to regenerative signals.

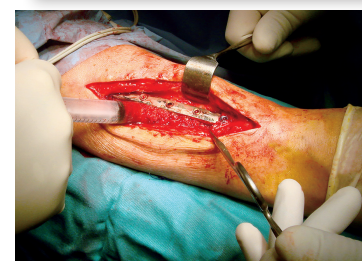


**Biocollagen crunch** covering the proximal part of a revision femoral stem which is excessively exposed because of the huge loss of bone substance.

Courtesy of Dr. Renzo Bianchi, Ospedale Civile, Feltre (Belluno) - Italia.



^ **Activagen mouldable paste** combined with cancellous chips and autologous bone marrow concentrate.



v The graft is mixed and a cut-off syringe is filled with it. It is inserted into the bone gap under the metal plate.

Courtesy of Dr. Ferdinando Da Rin, Istituti Codivilla-Putti, Cortina d'Ampezzo (Belluno) - Italia.

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**Bioteck** is the leading Italian company in the production of heterologous grafts for neurosurgery, orthopaedics, oral and maxillo-facial surgery. It was founded by the end of the 90's and it is constantly growing thanks to its exclusive system of enzymatic deantigenation at 37°C. Completely safe grafts with advanced biological and biomechanical characteristics are obtained from this system.



Bioteck currently produces and distributes in more than 50 countries:

- Biocollagen** - membranes and pastes based on type I and III collagen from equine Achilles tendon.
- Osteoplant** - a wide range of both cancellous and cortical bone grafts.
- Osteoplant Flex** - a line of exclusive grafts partially demineralized, making them mouldable and flexible.
- Osteoplant Activagen e Angiostad** - injectable and mouldable bone pastes in syringes, with huge osteoconductive and osteopromotion properties.

## References

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safetybiocompatibility

osteopromotion

boneregeneration

# bonepaste

biocollagen gel & crunch  
 osteoplant activagen  
 osteoplant angiostad

concept: mauro forlani - vi codi: 20130506\_BONE\_PASTE\_ENG print: abaltit

## demineralization of extra-cellular matrix

**Bioteck bone pastes** are obtained from equine bone tissue through an exclusive physicochemical process of enzymatic deantigenation and subsequently of total demineralization of bone matrix.

**Using digestive enzymes**, which work at physiological temperature (37°C), makes it possible to completely remove the tissue antigenic component without changing the native conformation of collagenous matrix molecules, which is therefore totally preserved. The deantigenated tissue is subjected to a **total demineralization process**. Calcium salts are completely hydrolysed in acid medium, by applying at the same time a difference of electrical potential to foster the ionic migration in solution. Therefore, the collagenous matrix, having on its surface specific molecular signals that foster regeneration, is completely exposed and is able to exert a positive effect of **osteopromotion**. In its native conformation, bone collagen exerts all its own effects: the function of coactivator of endogenous growth factors and the function of scaffold for osteoblast cell adhesion, thus creating an environment which is physiologically and biologically favourable for bone regeneration.

enzymatic deantigenation

total demineralization

beta ray sterilization

safety & biocompatibility

osteopromotion

## biocollagen crunch

It is an osteoconductive bone paste based on type I and III collagen extracted from equine Achilles tendon, combined with bone powder and cancellous chips (0.4±2 mm), in ready-to-use syringes. It is recommended in case of filling bone defects, alone or with autologous bone grafts, platelet growth factors and autologous bone marrow concentrate. It is very mouldable and has good properties of site adhesion. Furthermore, the great quantity of collagen fosters the blood clot formation.

**BCG-CRU5** Biocollagen Crunch syringe - 5cc  
**BCG-CRU10** Biocollagen Crunch syringe - 10cc



## osteoplant angiostad

Angiostad is an injectable gel specifically aimed at promoting neoangiogenesis. It is composed of a demineralized matrix containing signals which support the formation of new capillaries thus fostering graft vascularization. It is recommended in those cases in which regeneration may be difficult (i.e. when the ratio between the volume to be regenerated and the vital bone surface is adverse).

**OGS-GEL2** Osteoplant Angiostad syringe - 2cc



## osteoplant activagen injectable paste

It is an injectable bone paste based on demineralized bone matrix of equine cortical bone in a collagenous carrier. It contains the DBM-specific molecular signals that promote the cascade process of bone regeneration. It may be used alone in traumatology in comminuted fractures and slight cavitory bone defects, or combined with other grafts, platelet growth factors and autologous bone marrow concentrate.

**OGS-ACI5** Osteoplant Activagen Injectable Paste - 5cc

**OGS-ACI10** Osteoplant Activagen Injectable Paste - 10cc



## osteoplant activagen mouldable paste

It is a mouldable bone paste based on demineralized bone matrix of equine cortical bone and cancellous bone chips (0.4±2 mm) in a collagenous carrier, packed in cut-off syringes. It contains the DBM-specific molecular signals that promote the cascade process of bone regeneration. It may be used alone or combined with platelet growth factors and autologous bone marrow concentrate.

**OGS-ACM5** Osteoplant Activagen Mouldable Paste syringe - 5cc

**OGS-ACM10** Osteoplant Activagen Mouldable Paste syringe - 10cc



Bioteck bone pastes are ready for use and can be preserved at room temperature during five years starting from the production date. Due to their biological characteristics and their special malleability they are recommended in difficult situations even in case of severe bone deficits. Furthermore, they are specially effective as carriers for platelet growth factors and autologous bone marrow concentrate because of the great quantity of type I collagen.

Bioteck bone pastes are a class III Medical Device.