



**OsteoBiol<sup>®</sup>**  
by Tecnos

## Bone Grafting Materials

USED IN MORE THAN 400 000 SURGERIES | DISTRIBUTED IN OVER 60 COUNTRIES  
STRONG SCIENTIFIC BACKGROUND | EXTRAORDINARY CLINICAL RESULTS

REGENERATION SCIENCE

INSPIRED BY NATURE

## TECNOSS®: A UNIQUE PROCESS THAT ACCELERATES AND GUIDES NATURAL BONE REGENERATION

Tecnoss® developed and patented a unique biotechnology that prevents the ceramization phase of natural bone and preserves the tissue collagen, allowing an osteoclastic-type remodelling of the biomaterial similar to physiological bone turnover and delivering a product endowed with characteristics very similar to human mineral bone<sup>(1)</sup>.

**The combination of these factors allows a consistent new bone formation and a close contact between neo-formed bone and biomaterial granules.**

## COLLAGEN: A KEY FACTOR FOR BONE REGENERATION

Collagen has a key role in bone regeneration process in that:

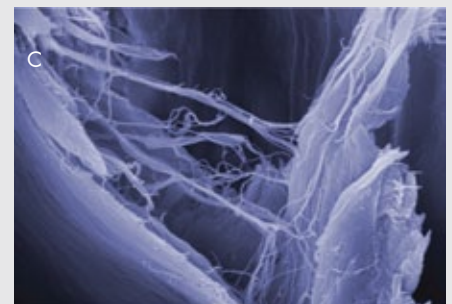
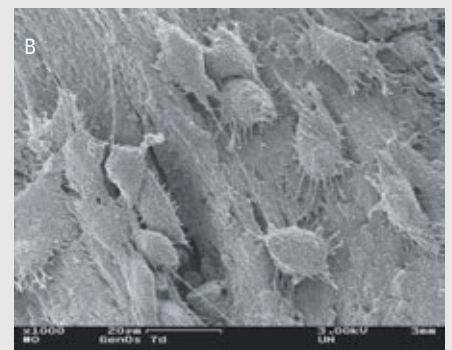
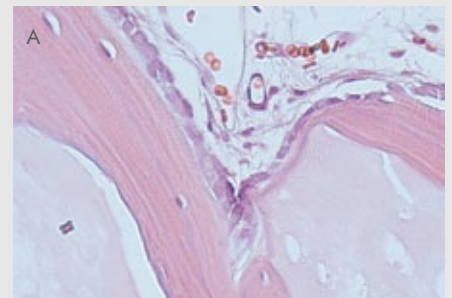
- a) it acts as a valid substrate for platelet activation and aggregation
- b) it serves to attract and differentiate the mesenchymal stem cells present in the bone marrow<sup>(2)</sup>
- c) it increases the proliferation rate of the osteoblasts up to 2/3 times<sup>(3)</sup>
- d) it stimulates the activation of the platelets, osteoblasts and osteoclasts in the tissue healing process

## OSTEOBIOL®: UNIQUE COLLAGENATED BIOMATERIALS

Thanks to the innovative Tecnos® technology, the OsteoBiol® line has the following important characteristics:

- 1) absence of a foreign body response<sup>(4)</sup>
- 2) gradual resorption over time<sup>(5,6)</sup>
- 3) stimulation/acceleration of physiological tissue healing process<sup>(2)</sup>
- 4) protection of the grafting site from infection (membranes)<sup>(7)</sup>
- 5) capability of carrying medication to the surgical site<sup>(8)</sup>

The Tecnos® new generation of biomaterials, thanks to a revolutionary technology, goes beyond the simple role of aiding natural bone regrowth by stimulating and accelerating this vital physiological process.



A | Image showing bone formation on collagenated porcine bone granules (OsteoBiol® Gen-Os®) 2 weeks after implantation in a rabbit. Staining hematoxyline-eosine. Original magnification x40. Courtesy of Prof U Nannmark and L Sennerby, Göteborg University, Sweden

B | SEM image of an OsteoBiol® Gen-Os® granule colonized by osteoblasts from a cell-line (MG63). Courtesy of Prof U Nannmark, Göteborg University, Sweden

C | OsteoBiol® membrane collagenic structure. Courtesy of Nobil Bio Ricerche, Villafranca d'Asti, Italy

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(4) Crespi R et al. Int J Oral Maxillofac Implants, 2011 Jul - Aug; 26(4):866-72

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(6) Barone A et al. Clin Implant Dent Relat Res, 2012 Jun; 14(3):373-9

(7) Barone A et al. Clin Oral Implants Res, 2013 Nov; 24(11):1231-7

(8) Fischer K et al. Clin Oral Implants Res, 2015 Oct; 26(10):1135-42. Epub 2014 Sep 15



# The OsteoBiol® product family

INNOVATIVE TECHNOLOGY PRODUCTS

## Gen-Os®



### COLLAGENATED HETEROLOGOUS CORTICO-CANCELLOUS BONE MIX

Natural replicate of autologous bone, Gen-Os® maintains the same intimate structures (matrix and porous form) and presents high osteoconductive properties providing support in bone neo-formation and helping to preserve the original graft shape and volume.

**Tissue of origin** | Cortico-cancellous heterologous bone mix  
**Tissue collagen** | Preserved  
**Physical form** | Slightly radiopaque granules  
**Composition** | 100% granulated mix  
**Granulometry** | 250-1000 µm  
**Re-entry time** | 4/5 months  
**Packaging** | Vial: 0.25 g, 0.5 g, 1.0 g, 2.0 g  
**GMDN:** 38746

## mp3®



### PRE-HYDRATED COLLAGENATED HETEROLOGOUS CORTICO-CANCELLOUS BONE MIX

Gradually resorbable granules mixed with collagen gel. Available in ready-to-use syringes can be easily grafted avoiding the hydration and manipulation phases decreasing the risk of accidental exposure of material to pathogens.

**Tissue of origin** | Cortico-cancellous heterologous bone mix  
**Tissue collagen** | Preserved plus an additional 10% collagen gel  
**Physical form** | Pre-hydrated granules and collagen gel  
**Composition** | 90% granulated mix, 10% collagen gel  
**Granulometry** | 600-1000 µm  
**Re-entry time** | About 5 months  
**Packaging** | Syringe: 1.0 cc, 3x0.25 cc, 3x0.5 cc, 3x1.0 cc  
**GMDN:** 38746

## Putty



### PRE-HYDRATED COLLAGENATED HETEROLOGOUS CORTICO-CANCELLOUS BONE PASTE

Made with an exclusive process that provides the product with exceptional malleability and plasticity, Putty easily adapts to sockets and peri-implant defects (with walls).

**Tissue of origin** | Cortico-cancellous heterologous bone mix  
**Tissue collagen** | Preserved plus an additional 20% collagen gel  
**Physical form** | Plastic consistency composed of collagen gel loaded with 80% micronized bone mix  
**Composition** | 80% granulated mix, 20% collagen gel  
**Granulometry** | Up to 300 µm  
**Re-entry time** | About 4 months  
**Packaging** | Syringe: 0.5 cc, 1.0 cc, 3x 0.25 cc, 3x 0.5 cc  
**GMDN:** 38746

## Gel 40



### PRE-HYDRATED COLLAGENATED HETEROLOGOUS CORTICO-CANCELLOUS BONE GEL

The characteristics of viscosity and density of Gel 40 facilitate handling of the product by the operator, providing a glue-like support.

**Tissue of origin** | Cortico-cancellous heterologous bone mix  
**Tissue collagen** | Preserved plus an additional 40% collagen gel  
**Physical form** | Collagen gel type I and III loaded with 60% bone mix  
**Composition** | 60% granulated mix, 40% collagen gel  
**Granulometry** | Up to 300 µm  
**Re-entry time** | About 4 months  
**Packaging** | Syringe: 0.5 cc, 3x0.5 cc  
**GMDN:** 38746

## Evolution



### HETEROLOGOUS COLLAGEN MEMBRANE

Obtained from mesenchymal tissue and completely resorbable, its structure is made of dense collagen fibers of high consistency and of extraordinary resistance that offer the specialist surgeon the maximum adaptability to bone tissue and soft tissues.

**Tissue of origin** | Heterologous mesenchymal tissue  
**Tissue collagen** | Preserved  
**Physical form** | Dried membrane with one smooth side and one micro-rough side  
**Thickness** | Fine: 0.3 mm (±0.1 mm), Standard: 0.5 mm (±0.1 mm)  
**Estimated resorption time** | Fine: about 3 months, Standard: about 4 months  
**Packaging** | 20x20 mm, 30x30 mm, 25x35 mm (oval)  
**GMDN:** 38746

## Lamina



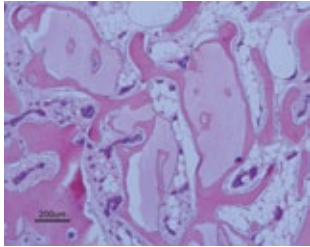
### COLLAGENATED HETEROLOGOUS CORTICAL BONE

Cortical Lamina is made of cortical bone of heterologous origin produced with an exclusive TecnoSS® process that maintains the typical consistency of the bone tissue from which it originates.

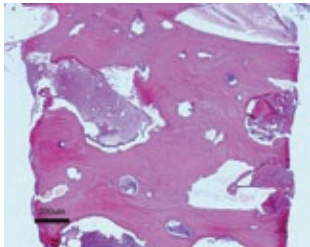
**Tissue of origin** | Cortical bone  
**Tissue collagen** | Preserved  
**Physical form** | Semi-rigid dried lamina, flexible after re-hydration  
**Composition** | 100% cortical bone  
**Thickness** | Fine: 0.5 mm (±0.1 mm), Medium Curved: 1.0 mm (±0.1 mm); Standard 3 mm (±1 mm)  
**Re-entry time** | Fine: about 5 months; Medium Curved: about 6 months; Standard: about 8 months  
**Packaging** | Fine: 25x25 mm, 25x35 mm (oval); Medium Curved: 35x35 mm (curved); Standard: 30x30 mm  
**GMDN:** 38746

# A strong scientific background

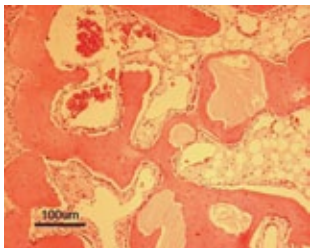
OVER 15 YEARS OF SCIENTIFIC RESEARCH



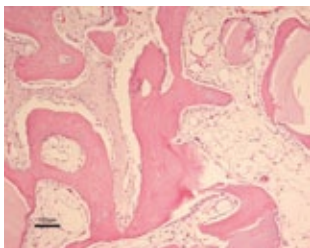
**Histology of OsteoBio® bone matrix**  
Courtesy of Prof Ulf Nannmark, University of Göteborg, Sweden



**Histology of maxillary sinus biopsy taken at 24 months. 48% new bone formation, 13% residual granules**  
Biopsy courtesy of Dr Roberto Rossi, Genova, Italy.  
Histology courtesy of Prof Ulf Nannmark, University of Göteborg, Sweden



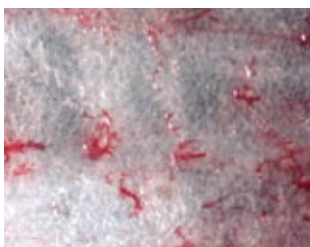
**Part of a biopsy showing newly formed bone after treatment with OsteoBio® Putty. Biopsies were taken 24 months after implantation in rabbit maxillae. The smaller granules are totally covered by newly formed bone and seams of osteoblasts are recorded almost at all bone surfaces. Both the marrow spaces and bone are fully nurtured by neovessels. Htx-eosine. Original magnification x20**  
Courtesy of Prof Ulf Nannmark, University of Göteborg, Sweden



**Part of a biopsy showing newly formed bone after treatment with OsteoBio® Gel 40. Biopsies were taken 5 weeks after implantation in rabbit maxillae. Htx-eosine. Original magnification x20**  
Courtesy of Prof Ulf Nannmark, University of Göteborg, Sweden



**SEM image showing collagenic matrix of OsteoBio® Evolution**  
Courtesy of Nobil Bio Ricerche, Villafranca d'Asti, Italy



**LM image of an OsteoBio® Lamina hydrated with blood: vascularisation enhanced by the presence of the original vascular canals**  
Source: Courtesy of Prof Ulf Nannmark, Göteborg University, Sweden

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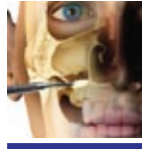
# Clinical indications

ENGINEERED FOR SPECIFIC CLINICAL INDICATIONS

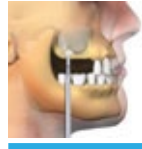
## GEN-OS | THE COLLAGENATED BIOMATERIAL



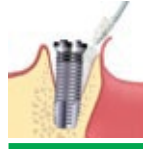
SOCKET PRESERVATION



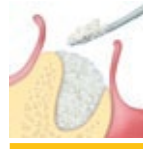
LATERAL ACCESS SINUS LIFT



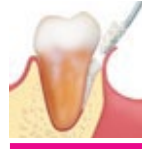
CRESTAL ACCESS SINUS LIFT



PERI-IMPLANT LESIONS  
1 OR 2 WALLS MISSING



HORIZONTAL AUGMENTATION  
2-WALL DEFECTS



INTRABONY DEFECTS  
2-WALL DEFECTS



GINGIVAL RECESIONS

## MP3 | ULTIMATE PERFORMANCE AND HANDLING



SOCKET PRESERVATION



RIDGE PRESERVATION



LATERAL ACCESS SINUS LIFT



HORIZONTAL AUGMENTATION  
2-WALL DEFECTS



VERTICAL AUGMENTATION  
INLAY TECHNIQUE

## PUTTY | ENGINEERED FOR PERI-IMPLANT DEFECTS



SOCKET PRESERVATION



PERI-IMPLANT LESIONS  
WALLS PRESERVED



HORIZONTAL AUGMENTATION  
RIDGE SPLIT

## GEL 40 | A UNIQUE HETEROLOGOUS BONE GEL



CRESTAL ACCESS SINUS LIFT



INTRABONY DEFECTS  
3-WALL DEFECTS



GINGIVAL RECESIONS

## EVOLUTION | THE NATURAL EVOLUTION OF COLLAGEN MEMBRANES



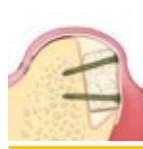
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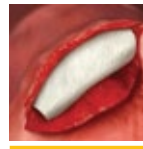
LATERAL ACCESS SINUS LIFT



PERI-IMPLANT LESIONS



HORIZONTAL AUGMENTATION  
2-WALL DEFECTS



HORIZONTAL AUGMENTATION  
RIDGE SPLIT



VERTICAL AUGMENTATION

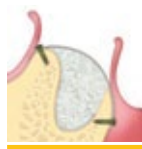


INTRABONY DEFECTS  
FINE MODEL

## LAMINA | A UNIQUE CORTICAL BONE BARRIER



LATERAL ACCESS SINUS LIFT



HORIZONTAL AUGMENTATION  
CURVED MODEL



# Case reports

CLINICAL EXCELLENCE EVERY DAY

## PERIODONTAL REGENERATION



Intrabony defect



Treatment with OsteoBio® Gen-Os



Covering with OsteoBio® Evolution



CAL gain of 3 mm after 9 months

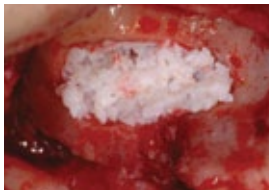
Documentation courtesy of  
Prof Dr **Sérgio Matos**  
University of Coimbra, Portugal  
e-mail: sergiomatos1@sapo.pt

Bone substitute: **OsteoBio® Gen-Os®**  
Membrane: **OsteoBio® Evolution**

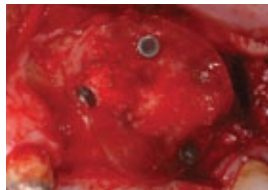
## BILATERAL SINUS LIFT WITH LATERAL ACCESS



Osteotomy performed to access the right maxillary sinus



Sinus filled with OsteoBio® mp3



Antrostomy covered with OsteoBio® Special collagen membrane

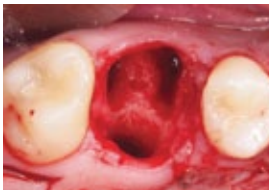


X-ray image 8 months after surgery

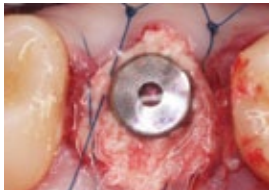
Documentation courtesy of  
Dr **Antonio Barone**  
Prof **Ugo Covani**  
Odontostomatology Department,  
"Ospedale della Versilia",  
Lido di Camaiore, Italy  
e-mail: barosurg@gmail.com

Bone substitute: **OsteoBio® mp3®**  
Membrane: **OsteoBio® Special**

## ALVEOLAR TISSUE PRESERVATION



Atraumatic extraction of the tooth 2.6



Implant placement and regeneration of the peri-implant gap with OsteoBio® Putty



Result at 3 months after surgery

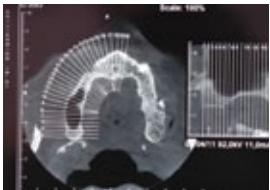


Impression for the realization of the ceramic fixed prosthesis

Documentation courtesy of  
Dr **Antonio Murillo Rodriguez**  
Prof at University Alfonso X,  
Eibar, Spain  
e-mail: dr\_murillorodriguez@yahoo.es

Bone substitute: **OsteoBio® Putty**

## CRESTAL ACCESS SINUS LIFT



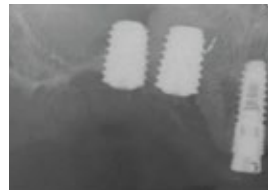
Pre-operative situation



Flap elevation and osteotomized bone



Sinus lift with OsteoBio® Gel 40



Post-operative x-ray with evidence of the graft material

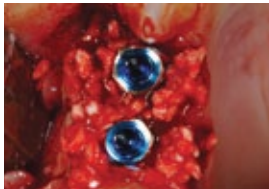
Documentation courtesy of  
Dr **Roberto Rossi**  
M.Sc.P. in Periodontology, Genova, Italy  
e-mail: drrossi@mac.com

Bone substitute: **OsteoBio® Gel 40**

## IMMEDIATE PLACEMENT AFTER TOOTH VERTICAL FRACTURE



Occlusal image of bone alveolus



Intraoperative image after implant Placement (OsteoBio® Apatos)



Evolution membrane in place



Occlusal image of two provisional crowns

Documentation courtesy of  
Prof Dr **José Luis Calvo Guirado**  
University of Murcia, Spain  
e-mail: josecalvog@gmail.com

Bone substitute: **OsteoBio® Apatos**  
Membrane: **OsteoBio® Evolution**

## HORIZONTAL AUGMENTATION



Alveolar ridge presenting an inadequate width for implant placement



Reconstruction of the alveolar ridge with bone substitute (OsteoBio® mp3)



Covering the augmented area with the OsteoBio® Cortical Lamina



Placement of two implants at 6 months

Documentation provided by  
Prof Dr **Hannes Wachtel**  
Dr **Tobias Thalmair**  
Private Institute for Periodontology and  
Implantology, Munich, Germany  
Email: hannes@wachtel.biz

Bone substitute: **OsteoBio® mp3®**  
Barrier: **OsteoBio® Lamina**

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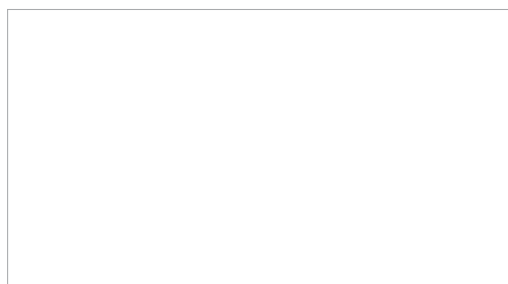
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