



**In partnership,
we're better**



Your worldwide
no.1 reference^{6,7}

Unique
biofunctionality

Outstanding
quality

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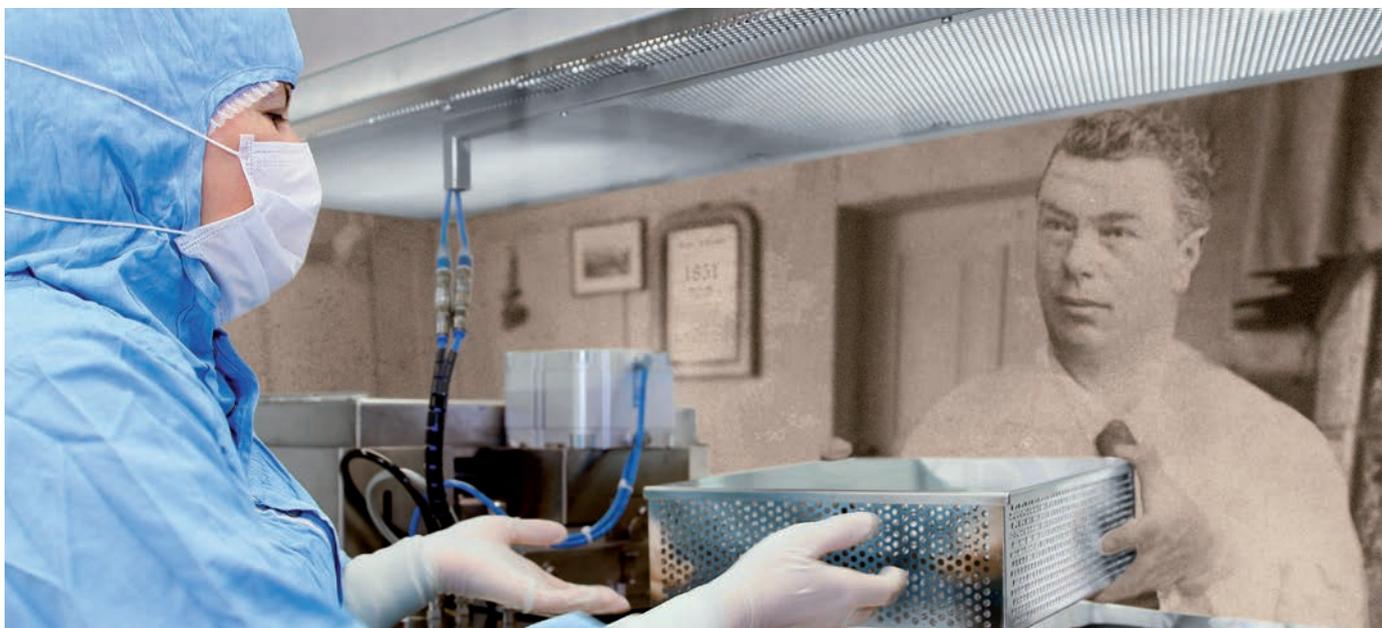
6 Millennium Research Group, Dental Biomaterials North America, 2018 (economic).

7 Millennium Research Group, Dental Biomaterials Europe, 2016 (economic).

Your magic hands –
our excellent products



Geistlich biomaterials – From pioneer to expert



Geistlich company founder, Dr. E. Geistlich's expertise is the origin of what we have become today: no. 1 in regenerative dentistry.

Thanks to intensive research and close collaboration with scientists and dentists over 30 years ago, Dr. Peter Geistlich created pioneering products for a new technology, Guided Bone Regeneration (GBR).

Organic components were removed from bone for the first time without alteration to its microstructure and mineral part. This is how Geistlich Bio-Oss[®], a bovine-based bone replacement material whose structure and chemical composition resembles human bone, came into being.

In consequence, Dr. Peter Geistlich achieved another milestone with the development of Geistlich Bio-Gide[®], a natural bi-layer collagen membrane. Geistlich Bio-Gide[®] enables surgical techniques to be simplified, superseding non-resorbable e-PTFE membranes. In addition, the remarkable wound healing properties of Geistlich Bio-Gide[®] have effectively revolutionized bone regeneration.¹

EXPERTISE IN COLLAGEN PROCESSING

Along with bone-processing, Geistlich has specialized in the processing of collagen for over 160 years and have refined this expertise from generation to generation. Manufacturing processes and systems have been continually optimized to make them cutting edge in their field. Today's range comprises many specialized collagen products such as a membrane with a barrier function (Geistlich Bio-Gide[®]), with a scaffold function for soft tissue regeneration (Geistlich Mucograft[®], Geistlich Fibro-Gide[®]) and products designed for easy handling (Geistlich Bio-Oss[®] Collagen).



¹ Zitzmann NU et al., Int J Oral Maxillofac Implants. 1997 Nov-Dec;12(6):844-52 (clinical).

The Dream-Team: Geistlich Bio-Oss® and Geistlich Bio-Gide®

Guided Bone Regeneration (GBR) with Geistlich Biomaterials

Guided Bone Regeneration uses the body's regenerative capability to reconstruct missing bone. Compared to other regenerative techniques, GBR has proved to be especially dependable.² Predictable results can be obtained both functionally and esthetically, even in complex cases.

The GBR success story is the result of close and inspiring collaboration between Geistlich Biomaterials and leading dental specialists. The combined application of Geistlich Bio-Oss® and Geistlich Bio-Gide® as a part of GBR is today considered the standard therapy for a wide range of indications.⁴



Prof. Daniel Buser | Berne, Switzerland

“GBR with biomaterials from Geistlich succeeds esthetically and functionally, is extremely reliable and features minimal risk of esthetic complications.”

A POWERFUL COMBINATION

With Geistlich Bio-Oss® and Geistlich Bio-Gide® a dentist can have confidence that they are using complimentary products that have extensive scientific documentation and proven efficacy in millions of clinical applications.

- › High long-term implant survival rate³
- › Excellent esthetic long-term results⁴
- › Easy and safe to use



² Aghaloo TL et al., Int J Oral Maxillofac Implants. 2007; 22(suppl):49-70 (clinical).
³ Jung R et al., Clin Oral Implants Res. 2013 Oct;24(10):1065-73 (clinical).
⁴ Buser D et al., J Dent Res. 2013 Dec;92(12 Suppl):176S-82S (clinical).

Work with the no. 1^{6,7}

Your worldwide no. 1 reference

Geistlich Bio-Oss® and Geistlich Bio-Gide® are the experts in regenerative dentistry. Some 1,200 pre-clinical and clinical studies⁵ prove the successful use in practice. No other supplier has the experience of Geistlich Biomaterials when it comes to the number of patients treated and products sold. For more than 30 years Geistlich Biomaterials has been the undisputed no. 1 in regenerative dentistry.^{6,7}

Unique biofunctionality

The excellent results of Guided Bone Regeneration with Geistlich Bio-Oss® and Geistlich Bio-Gide® are largely due to their unsurpassed biofunctionality. The products are perfectly suited to combined use: Geistlich Bio-Oss® forming the scaffold for the in-growing blood vessels and bone-forming osteoblasts while Geistlich Bio-Gide® shields the young bone from the surrounding connective tissue cells and supports in wound healing.

Your worldwide
no.1 reference

Unique
biofunctionality

Outstanding
quality

Outstanding quality



Quality and safety are at the forefront of the manufacturing process at Geistlich Pharma. At our site in Switzerland we inspect every production stage of our biomaterials; from the raw material selection through to the quality control of the final product. Our products and processes are regularly verified by stringent international agencies.

5 Pubmed 2018 Search term "Bio-Oss or Bio-Gide or Mucograft".

6 Millennium Research Group, Dental Biomaterials North America, 2018 (economic).

7 Millennium Research Group, Dental Biomaterials Europe, 2016 (economic).

Not all biomaterials are the same – Take a closer look

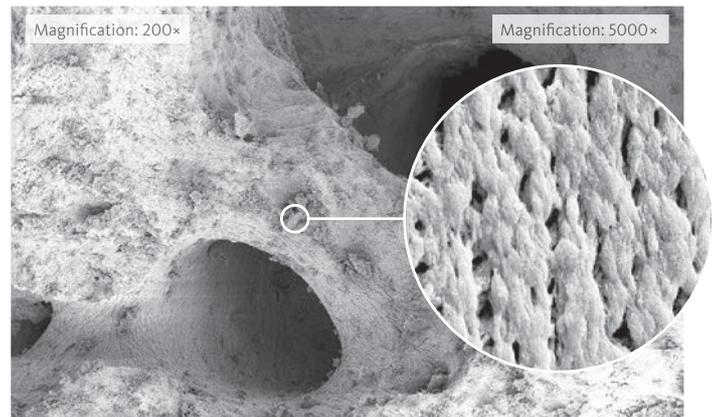


Prof. Mariano Sanz | Madrid, Spain

“Geistlich products have gained my trust down the years.”

Geistlich Bio-Oss® the bone replacement material with outstanding biofunctionality

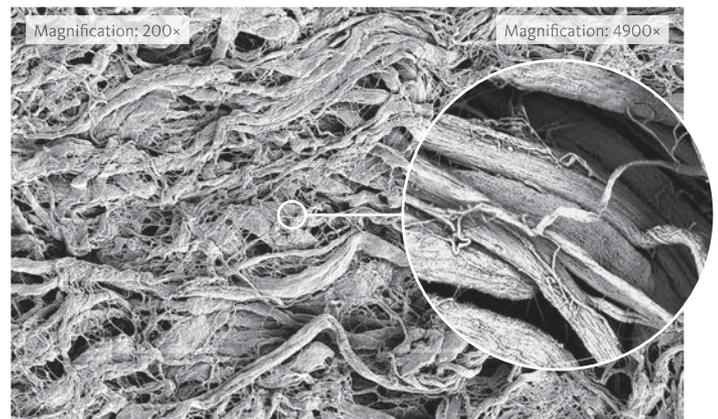
Geistlich Bio-Oss® is very similar to human bone in its structure and chemical make-up. The biofunctional biomaterial aids vascularization and the formation of new bone.⁸ The slow resorption of Geistlich Bio-Oss® increases the stability of the augmentation material⁹ – the best prerequisite for long-term implant survival rates.³



Geistlich Bio-Oss®: Unique macro- and micropore structure

Geistlich Bio-Gide® the unique bi-layer collagen membrane

Geistlich Bio-Gide® is a porcine collagen membrane without any artificial cross-linking which closely resembles human collagen. The natural bi-layer structure promotes reliable bone regeneration¹⁰ and excellent tissue integration on account of an optimal barrier duration. The soft tissue heals without scarring and largely without complications.¹¹



Geistlich Bio-Gide®: Unique arrangement of collagen fibers (rough side)

³ Jung R et al., Clin Oral Implants Res. 2013 Oct;24(10):1065–73 (clinical).
⁸ Galindo-Moreno P et al., Clin Oral Impl Res. 2010;21(2):221–7 (clinical).
⁹ Orsini G et al., Oral Dis. 2007 Nov;13(6):586–93 (clinical).
¹⁰ Schwarz F et al., Clin Oral Implants Res. 2014 Sep;25(9):1010–5 (clinical).
¹¹ Becker J et al., Clin. Oral Implants Res. 2009 Jul;20(7):742–9 (clinical).

Complementary processes in bone regeneration

1 UNIQUE STRUCTURES

Optimal protection for bone regeneration

Geistlich Bio-Gide® is a unique bi-layer collagen membrane comprising a smooth and a rough, open-pored layer.

Geistlich Bio-Gide®



Geistlich Bio-Gide®:
Unique bi-layer structure
(100×)²

Geistlich Bio-Oss®



Geistlich Bio-Oss®:
Micropores (5000×)²

Ideal environment for forming new bone¹⁵

Geistlich Bio-Oss® consists of a unique interlinked pore system. The micropores ensure an efficient fluid intake. The macropores permit unimpeded migration of cells.

2 BIOLOGICAL INTERACTION

Uneventful wound healing¹¹

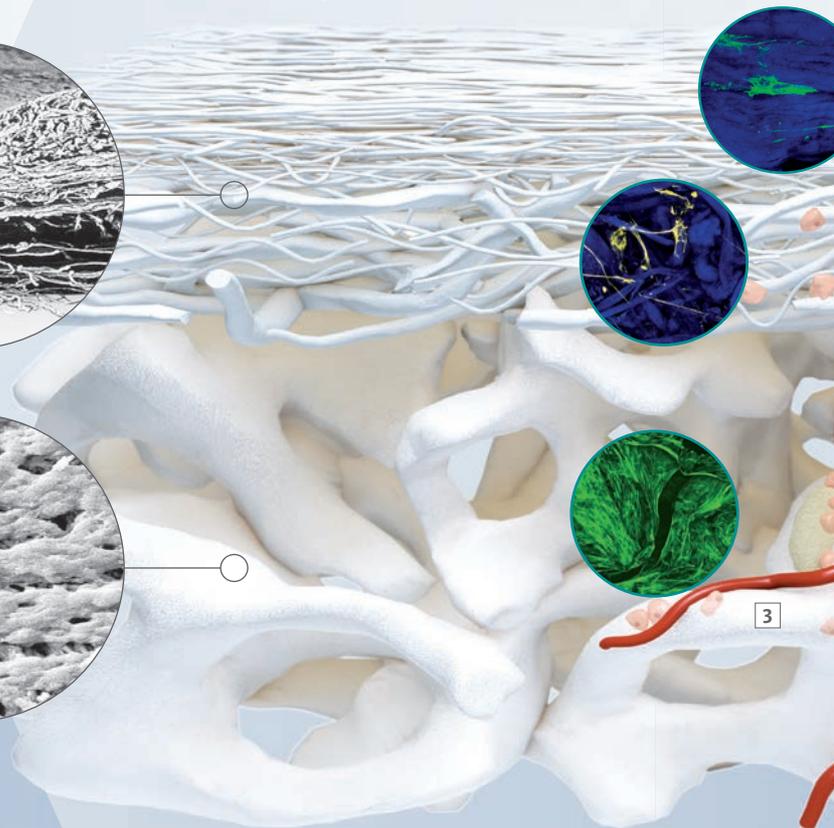
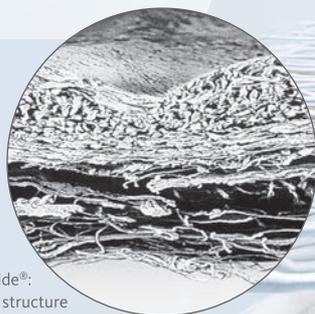
The smooth layer orientated towards the soft tissue, favors the growth of fibroblasts  1. Whilst the barrier function prevents the ingrowth of soft tissue into the newly forming bone beneath.

Optimum bone healing¹⁰

The rough layer orientated towards the bone, functions as a three-dimensional scaffold for osteoblasts growth  2.

Prompt and homogeneous vascularization¹³

The natural collagen structure of Geistlich Bio-Gide® permits prompt and homogeneous vascularization and so brings about optimum tissue integration and wound stabilisation.



Plenty of space for vascularization and bone formation^{16,17}

The pore system and surface morphology of Geistlich Bio-Oss® favors the growth of osteoblasts. The porous structure serves as a scaffold for in-growing blood vessels and bone growth. Fluorescently-labelled hMSCs* grown on GeistlichBio-Oss® particles for 3 weeks  3.

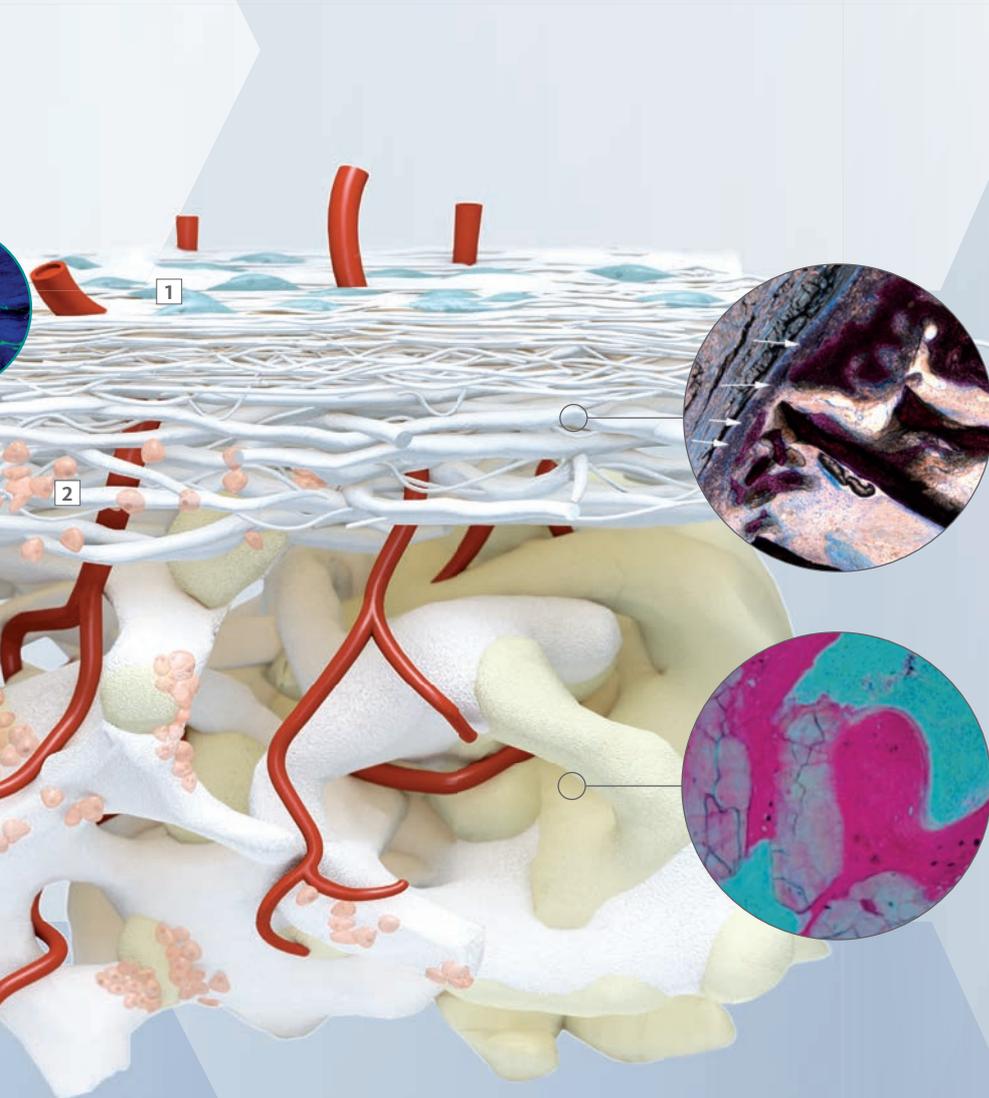
3 Jung R et al., Clin Oral Implants Res. 2013 Oct;24(10):1065-73 (clinical)
10 Schwarz F et al., Clin Oral Implants Res. 2014 Sep;25(9):1010-5 (clinical).
11 Becker J et al., Clin. Oral Implants Res. 2009 Jul;20(7):742-9 (clinical).
12 Data on file. Geistlich Pharma, Wolhusen, Switzerland (pre-clinical).
13 Rothamel D et al., Clin Oral Implants Res. 2005 Jun;16(3):69-378 (pre-clinical).

14 Rothamel D et al., Int J Oral Maxillofac Implants. 2012 Jan-Feb;27(1):146-54 (pre-clinical).
15 Berglundh T, Lindhe J, Clin Oral Implants Res. 1997 Apr;8(2):117-24 (pre-clinical).
16 Weibrich G et al., Mund Kiefer Gesichtschirurg. 4, 2000 May;148-52 (pre-clinical)
17 Degidi M et al., Oral Dis. 2006 Sep;12(5):469-75 (clinical).
18 Orsini G et al., J Biomed Mater Res B Appl Biomater. 2005 Jul(1):448-57 (clinical).

3 INTEGRATION

Optimal barrier time

Optimum barrier instead of unnecessary blockade! Once the protective function of Geistlich Bio-Gide® has been fulfilled the membrane resorbs and the natural complex structure of the soft tissue, with all the intrinsic components such as the periosteum, form.¹⁴



Stable scaffold for new bone^{18,19,20,21}

Thanks to its biofunctionality, Geistlich Bio-Oss® is integrated into the natural bone remodelling process. Geistlich Bio-Oss® and the newly formed bone make a stable scaffold which favors long-term clinical success.

4 CLINICAL LONG-TERM SUCCESS

Implant survival rate with Geistlich Bio-Oss® & Geistlich Bio-Gide®

96%

Aghaloo et al. 2007

Clinical long-term success in combination

The slow resorption of Geistlich Bio-Oss® and the ideally matched protective function of Geistlich Bio-Gide® promote the long-term volume stability²² of the augmentation material and ensure high implant survival rates.³

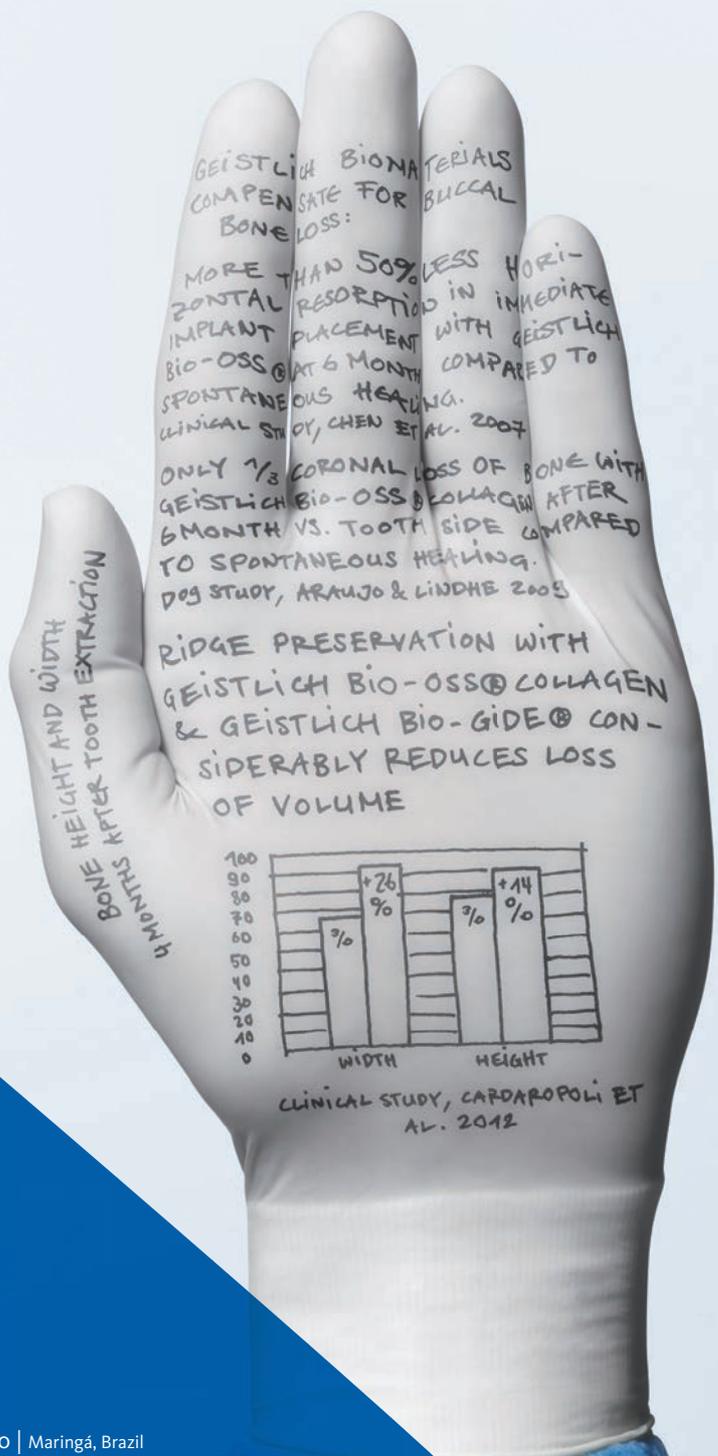
19 Piattelli M et al., Int J Oral Maxillofac Implants.1999 Nov-Dec;14(6):835-40 (clinical).

20 Sartori S, et al., Clin Implants Res. 2003 Jun;14(3):369-72 (clinical).

21 Traini T et al., J Periodontol. 2007 May; 78(5):955-61 (clinical).

22 Mordenfeld A et al., Clin Oral Implants Res. 2010 Sep;21(9):961-70 (clinical).

* Human mesenchymal stem cells



Prof. Maurício Araújo | Maringá, Brazil

“I have faith in Geistlich Biomaterials because they are scientifically proven and have been used successfully in practice for years.”

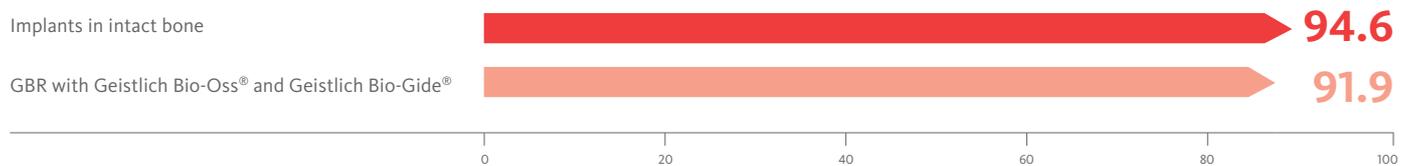
All our science in your hands

Numerous studies prove excellent long-term results

After 12–14 years implants that were placed in bones augmented with Geistlich Bio-Oss® and Geistlich Bio-Gide® show the same survival rate as implants in pristine bone.³

► **Reliable:** 91.9% implant survival rate after 12–14 years³

Implant survival rate (%)



...and stable esthetic results

Guided Bone Regeneration with Geistlich Bio-Oss® and Geistlich Bio-Gide® yield reliable results in esthetic terms. Due to the contour augmentation the facial bone wall was able to be preserved in 95% of patients over a period lasting from 5 to 9 years.^{4,23}

► **Predictable:** Excellently preserved facial bone wall after 5–9 years^{4,23}

Minor bone augmentation

Prof. D. Buser



³ Jung R et al., Clin Oral Implants Res. 2013 Oct;24(10):1065–73 (clinical).

⁴ Buser D et al., J Dent Res. 2013 Dec;92(12 Suppl):176S–82S (clinical).

²³ Jensen SS et al., J Periodontol. 2014 Nov;85(11):1549–56 (clinical).

The right solution for every challenge

Extraction sockets with defective socket

► Product solution: Geistlich Bio-Oss® Collagen | Geistlich Bio-Gide®

Prof. M. Araújo



1 Clearly visible buccal bone dehiscence after extraction of tooth 14 and forming a flap.



2 Augmentation with Geistlich Bio-Oss® Collagen.



3 A Geistlich Bio-Gide® is applied to cover the augmentation material.



4 4 months after extraction: abundant newly formed buccal bone.

Extraction sockets with intact socket

► Product solution: Geistlich Bio-Oss® Collagen | Geistlich Mucograft® Seal

Dr. R. Cavalcanti



1 Initial situation before extracting tooth 14.



2 Extraction socket filled with Geistlich Bio-Oss® Collagen and sealed with Geistlich Mucograft® Seal.



3 Geistlich Mucograft® Seal sutured using single interrupted sutures.



4 Final restoration 7 months after tooth extraction.

Minor bone augmentation

► Product solution: Geistlich Bio-Oss® Collagen | Geistlich Bio-Gide®

Prof. K.-L. Ackermann



1 Bone loss showing apical implant threads.



2 Application of Geistlich Bio-Oss®.



3 Application of Geistlich Bio-Gide®.



4 Good healing of the hard and soft tissue 13 months after surgery.

Major bone augmentation

► Product solution: Geistlich Bio-Oss® | Geistlich Bio-Gide®

Prof. D. Buser



1 Defect with pronounced horizontal bone loss.



2 Cortico-cancellous bone transplant from the chin area.



3 Contouring with Geistlich Bio-Oss® and coverage with Geistlich Bio-Gide®.

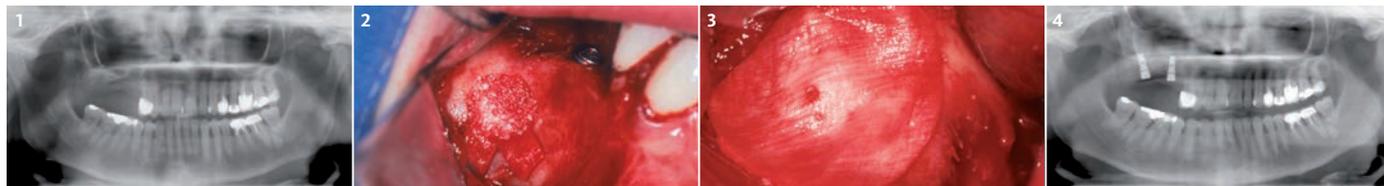


4 Suitable bone bed for implant placement 6 months after surgery.

Sinus floor elevation

► **Product solution:** Geistlich Bio-Oss® Pen | Geistlich Bio-Gide®

Dr. P. Valentini



1 Atrophied posterior maxilla with insufficient bone height (<2–3 mm).

2 Geistlich Bio-Oss® completely fills the lateral window orientated to the buccal bone wall.

3 The lateral window is covered with a Geistlich Bio-Gide® membrane.

4 The postoperative x-ray shows the augmented region and the implants placed.

Periodontal defects

► **Product solution:** Perio-System Combi-Pack

Prof. M. Christgau



1 Intraoperative view of the elongated twin-wall defect.

2 The basal defect is filled with autogenous bone chips and augmented with Geistlich Bio-Oss® Collagen.

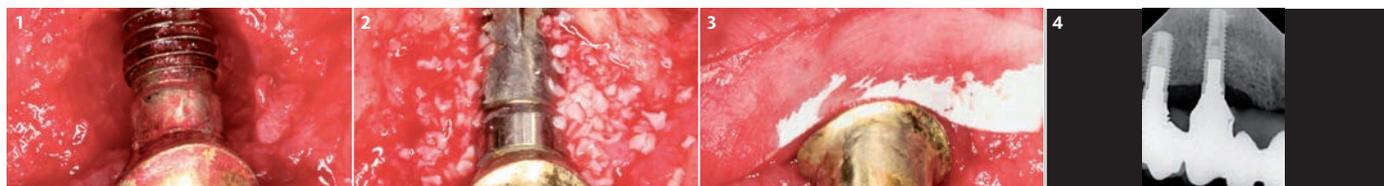
3 Coverage with Geistlich Bio-Gide® Perio membrane cut to size and applied without fixing.

4 Clinical situation 6 years after surgery shows a long-term stable condition.

Peri-implantitis

► **Product solution:** Geistlich Bio-Oss® | Geistlich Bio-Gide®

Prof. F. Schwarz*



1 Class Ic* defect configuration.

2 Class Ic defect component after application of Geistlich Bio-Oss®.

3 "Double layer" membrane technique with Geistlich Bio-Gide® on vestibular and lingual aspect.

4 Radiographic findings after 12 months show a gain in bone.

Soft tissue regeneration

► **Product solution:** Geistlich Fibro-Gide®

PD Dr. Daniel Thoma



1 Baseline frontal view: missing central incisor. Implant visible through mucosa due to thin biotype.

2 Palatal island flap prepared to allow for tension-free wound closure. Geistlich Fibro-Gide® in situ, immobilized with a mattress suture.

3 Tension-free wound closure using single interrupted sutures (Dafilon 5-0, Braun).

4 6 months follow-up: final crown in place.

► **Product solution:** Geistlich Mucograft®

Dr. M. K. McGuire**



1 Initial situation: Patient with insufficient keratinized tissue.

2 Geistlich Mucograft® is cut to the size of the defect and placed onto the recipient site in a dry state.

3 Geistlich Mucograft® is sutured with 5-0 sutures and absorbs the blood from the receiving site.

4 Gain in keratinized gingiva and excellent color and texture match to the adjacent tissue after 6 months.

*Schwarz et al. Clin Oral Implants Res. 2007 Apr;18(2):161–70

**McGuire MK & Scheyer ET. J Periodontol. 2014 Oct;85(10):1333–41 (clinical).

Indications & product solutions

	Extraction sockets with intact socket	Extraction sockets with defective socket	Minor bone augmentation	Major bone augmentation	Sinus floor elevation	Periodontal defects	Peri-implantitis	Soft tissue regeneration
BONE REPLACEMENT MATERIALS								
Geistlich Bio-Oss® Granules 0.25–1 mm 0.25 g ~ 0.5 cm ³								
Geistlich Bio-Oss® Granules 0.25–1 mm 0.5 g ~ 1.0 cm ³								
Geistlich Bio-Oss® Granules 0.25–1 mm 1.0 g ~ 2.0 cm ^{3*}								
Geistlich Bio-Oss® Granules 0.25–1 mm 2.0 g ~ 4.0 cm ³								
Geistlich Bio-Oss® Granules 1–2 mm 0.5 g ~ 1.5 cm ³								
Geistlich Bio-Oss® Granules 1–2 mm 1.0 g ~ 3.0 cm ^{3†}								
Geistlich Bio-Oss® Granules 1–2 mm 2.0 g ~ 6.0 cm ³								
Geistlich Bio-Oss® Block 1 x 1 x 2 cm ~ 2.0 cm ³								
Geistlich Bio-Oss Pen® Granules 0.25–1 mm 0.25 g ~ 0.5 cm ³								
Geistlich Bio-Oss Pen® Granules 0.25–1 mm 0.5 g ~ 1.0 cm ³								
Geistlich Bio-Oss Pen® Granules 1–2 mm 0.5 g ~ 1.5 cm ³								
Geistlich Bio-Oss® Collagen 100 mg ~ 0.2–0.3 cm ³								
Geistlich Bio-Oss® Collagen 250 mg ~ 0.4–0.6 cm ³								
Geistlich Bio-Oss® Collagen 500 mg ~ 0.9–1.1 cm ³								
MEMBRANES								
Geistlich Bio-Gide® 25 x 25 mm								
Geistlich Bio-Gide® 30 x 40 mm								
Geistlich Bio-Gide® Compressed 13 x 25 mm								
Geistlich Bio-Gide® Compressed 20 x 30 mm								
Geistlich Bio-Gide® Perio 16 x 22 mm								
Geistlich Bio-Gide® Shape 14 x 24 mm								
COMBI-KITS								
Geistlich Combi-Kit Collagen Geistlich Bio-Oss® Collagen 100 mg + Geistlich Bio-Gide® 16 x 22 mm								
Perio-System Combi-Pack Geistlich Bio-Oss® Collagen 100 mg + Geistlich Bio-Gide® Perio 16 x 22 mm								
MATRICES								
Geistlich Mucograft® Seal 8 mm diameter								
Geistlich Mucograft® 15 x 20 mm, 20 x 30 mm								
Geistlich Fibro-Gide® 15 x 20 x 6 mm								

► Product availability may vary from country to country

Rely on our products for peace of mind



GEISTLICH BIO-OSS®

- › Geistlich Bio-Oss® is the most used and – with over 1,000 studies²⁴ – the most documented bone replacement material in regenerative dentistry.
- › The biofunctional biomaterial aids vascularization and the formation of new bone.⁸ The slow resorption of Geistlich Bio-Oss® increases the stability of the augmentation material⁹ – the best prerequisite for a long-term high implant survival rate.³
- › Geistlich Bio-Oss® Collagen and the Geistlich Bio-Oss Pen® provide enhanced handling.

GEISTLICH BIO-GIDE®

- › Geistlich Bio-Gide® is the first and globally the most documented collagen membrane in regenerative dentistry.³⁰
- › Geistlich Bio-Gide® Compressed is the product twin to Geistlich Bio-Gide® with a firmer feel.
- › Geistlich Bio-Gide® Shape is a ready-to-use and pre-formed membrane indicated for use in combination with Geistlich Bio-Oss® Collagen for application in extraction sockets with defective buccal bone walls.
- › Geistlich Bio-Gide® Perio features a compressed structure for precise placement at the defect.



GEISTLICH FIBRO-GIDE® AND GEISTLICH MUCOGRAFT®

- › Geistlich Fibro-Gide® is a volume-stable collagen matrix, specifically designed for the increase in soft-tissue thickness and for covering recession defects.¹²
- › Geistlich Mucograft® is a unique collagen matrix, specifically designed for augmenting keratinized tissue and for covering recession defects.¹²
- › Geistlich Mucograft® Seal is available in a convenient circular shape and indicated for use in combination with Geistlich Bio-Oss® Collagen for sealing extraction sockets with preserved buccal walls.
- › All soft tissue products from Geistlich Biomaterials offer a painless alternative to autogenous soft tissue grafts.²⁵⁻²⁹



3 Jung R et al., Clin Oral Implants Res. 2013 Oct;24(10):1065–73 (clinical).
 8 Galindo-Moreno P et al., Clin Oral Impl Res. 2010;21(2):221–7 (clinical).
 9 Orsini G et al., Oral Dis. 2007 Nov;13(6):586–93 (clinical).
 24 Pubmed 2018 Search term "Bio-Oss".
 25 Cardaropoli D, et al. J Periodontol. 2012 Mar;83(3):321–8 (clinical).

26 Sanz M et al., J Clin Periodontol. Okt. 2009 Oct;36(10):868–76 (clinical).
 27 Thoma DS, et al. J Clin Periodontol. 2016 Oct; 43(10): 874–85 (clinical).
 28 Zeltner M, et al. J Clin Periodontol. 2017 Apr; 44(4): 446–453 (clinical).
 29 Huber S, et al. J Clin Periodontol. 2018 Apr;45(4):504–512 (clinical).
 30 Pubmed 2018 Search term "Bio-Gide".

GEISTLICH BIOMATERIALS

As a result of its longstanding tradition the Swiss family firm Geistlich Biomaterials is now one of the **leading global suppliers in regenerative dentistry**. Dentists and dental specialists in nearly **80 markets** on **6 continents** place their faith in the reliable and peerless quality of Geistlich Bio-Oss® and Geistlich Bio-Gide®. More than **500 employees** in **10 locations** ensure that the pioneering products remain at the top of their field: Through **intensive scientific research** endeavours and the sustainable refinement of **solutions** with our users in mind.

From experts. For experts.



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