

Geistlich
Bio-Oss®



Biological Interaction – a key factor for the
Biofunctionality of Geistlich Bio-Oss®



bio.flavonoid \ bī-ō-fla-vō-noid
flavonoid – called also vitamin P
bio.functionality \ .bi-(.)f(y)ūnshənälētē
Geistlich Bio-Oss®

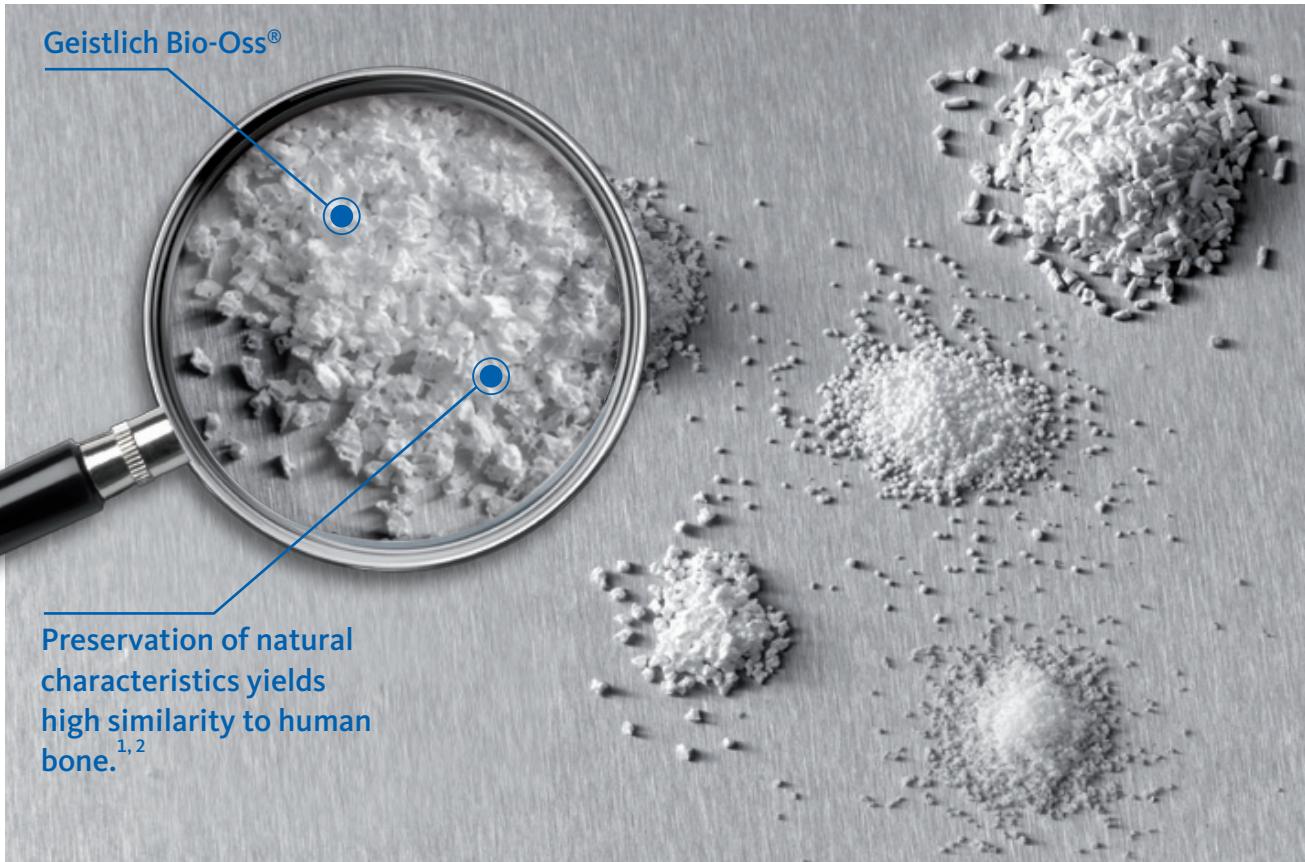
• Hydrophilicity

• Topography

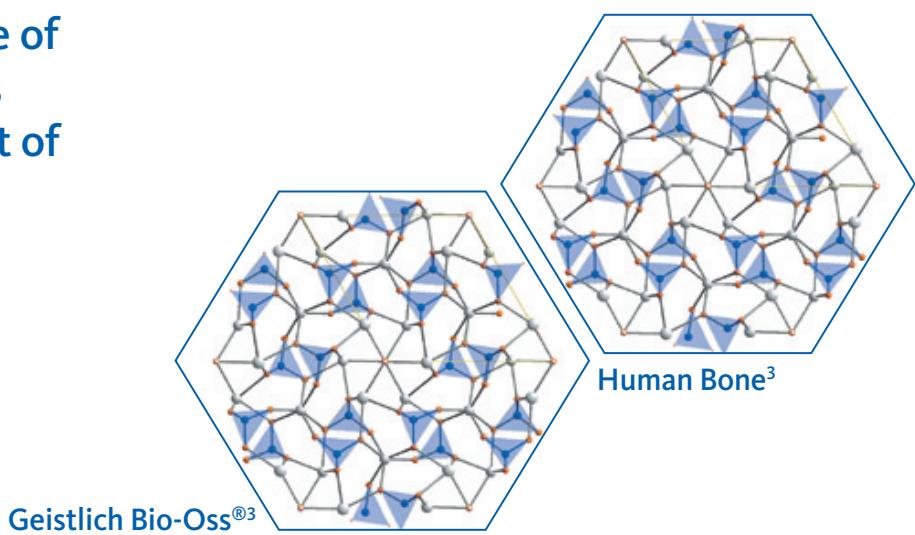
• Biological Interaction

The unique Biological Interaction of Geistlich Bio-Oss®...

Look closely, it's worth it



The crystal structure of Geistlich Bio-Oss® is highly similar to that of human bone.³



¹ Posner A.S, Eanes E.D, Harper RA., Zipkin I. (1963) bone apatite. Arch. oral Biol (8):549-57

² Eanes E.D, Zipkin I, Harper RA., Posner AS. (1965) Arch. oral Biol. (10):161-173

³ Bufler M. (2004) Dissertation (PhD Thesis) urn:nbn:de:hbz:467-619; 14

⁴ Trubiani O, FulleS et al. (2010). Eur Cell Mater 20: 72-83

⁵ Traini T et al., J Periodontol 2007;78: 955-961

⁶ Orsini, G, Traini T et al. (2005). J Biomed Mater Res B Appl Biomater 74(1): 448-51

⁷ Buser D. et al., J Periodontol 2008;79:1773-1781

⁸ Jensen et al. (2012) Clin. Oral Impl. Res. Mar;23(3):263-273

⁹ Aghaloo TL et al., Int Journal of Maxillofac Implants 2007;22:49-70

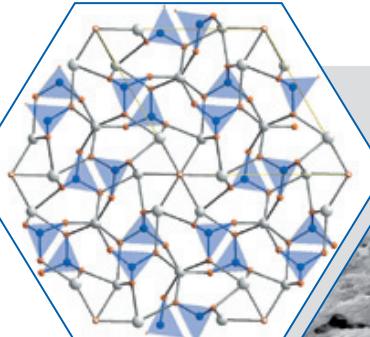
¹⁰ Urban et al., Int J Oral Maxillofac Implants 2010;25:1203-1212

¹¹Schäfer B, department of core technology, Geistlich Biomaterials, Wolhusen, Switzerland

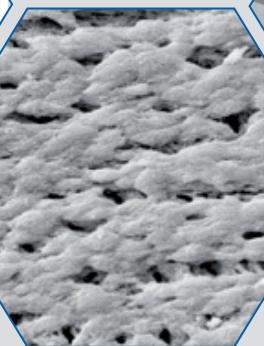


... is one of the key factors for the clinical success

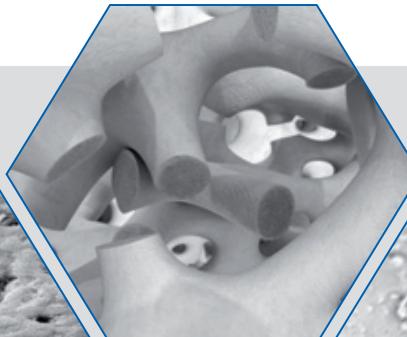
1 Crystal



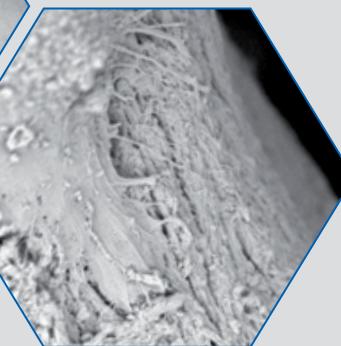
2 Porosity



3 Geometry and Morphology



4 Protein adsorption
Cell adhesion⁴



5 Matrix deposition^{5,6}



Biological Interaction:

Geistlich Bio-Oss® crystal size determines the unique pore geometry. The surface supports the adsorption of proteins on Geistlich Bio-Oss® particles enabling efficient adhesion of osteoblasts. This biological interaction leads to reliable bone formation.

Clinical success⁷

Case Prof. Dr. D. Buser



Defect filled with autogenous bone.



Contour augmentation is achieved with Geistlich Bio-Oss®.



The augmentation material is covered with a Geistlich Bio-Gide® applied with a double-layer technique.



An optimal esthetic outcome and stable tissue height at 5 year follow-up.



The facial bone wall shows a thickness of 3 mm.

Biological Interaction is a key factor for the Biofunctionality of Geistlich Bio-Oss® leading to:

- > Reliable bone formation⁸
- > Optimal bone quality⁸
- > High implant survival rate^{9,10}



Geistlich Bio-Oss® spongiosa granules



Geistlich Bio-Oss® Collagen



Geistlich Combi-Kit Collagen

Biological Interaction – a key factor for the Biofunctionality of Geistlich Bio-Oss®

The **Biofunctionality** of Geistlich Bio-Oss® represents the sum of its unique properties and is the basis for its clinical success. In addition to **Hydrophilicity** and **Topography**, **Biological Interaction** is part of the family of characteristics that define the Biofunctionality of Geistlich Bio-Oss®. At the core of **Biological Interaction** are cellular events that lead to effective bone regeneration.

The first interaction of Geistlich Bio-Oss® with a biological environment occurs on the biomaterial surface. The specific Geistlich Bio-Oss® surface promotes cell adhesion by binding of electrolytes, amino acids, peptides and proteins. Fibronectin and vitronectin are examples of proteins that bind to the surface which are important for the adhesion of osteoblasts attachment and the formation of focal adhesions.^{4,11}

The **Biological Interaction** of Geistlich Bio-Oss® triggers critical new bone formation and underlies the long-term benefits associated with Geistlich Bio-Oss®.

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Biofunctionality of Geistlich Bio-Oss®
Clinical success through unique characteristics