“Feel the Clinical Freedom on Science and Safety”

Founded in 1999, Purgo Biologics strives to become one of the leading global companies in oral health care with its focus on safe biomaterials for soft tissue and bone regeneration. Based on the specialized experiences accumulated by our outstanding research personnel, Purgo Research and Development Center based in Seoul is thriving to become the best in the world, specifically in the expertise of oral biomaterials for soft tissue and bone regeneration. All members in Research and Development Center are pursuing the optimized technical developments with various clinical studies, cooperative research with the governments, clinicians and educational institutions.

The solutions manufactured by Purgo are gaining fame throughout the world and Purgo’s solutions are widely accepted by global dentists from more than 30 countries.

Our production site is complying with the most international quality standards and regularly inspected by international agencies. Each production stage of our biologics solutions are controlled from the selection of the raw material to the final product.
Science Speaks THE Graft™

THE Graft™ is a natural, porous bone mineral matrix. It is produced by removal of all organic components from porcine bone. Due to its natural structure the anorganic bone mineral of THE Graft™ likens physical and chemical aspects of mineralized matrix of human bone. When packed into a bone defect, THE Graft™ gradually resorbs and is replaced with bone during the healing process. It is available in cancellous granules packaged in vial. THE Graft™ is sterilized using gamma irradiation.

Unique proprietary manufacturing process removes very effectively potential immunogenic organic elements keeping the natural structure of the matrix.

THE Graft™ quality and safety have been scientifically demonstrated with in-vitro, in-vivo studies, large case study reports and international randomized clinical research. Systematic review and meta-analysis are conducted on THE Graft™ worldwide. [1,2]

THE Graft™ has established its fame throughout the world, both scientifically and clinically, becoming the popular bone regeneration material.

Specifications

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Indications

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<th>Defect bone regeneration</th>
<th>Maxilla bone augmentation</th>
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<th>Sinus Floor elevation</th>
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THE Graft™ Purity (3-4 s)

Is THE Graft™ safety material?

Proprietary virus inactivation process technology. Thanks to highly efficient manufacturing process, THE Graft™ is free from any organic components that might be potential causes of infection or immune reaction. This unique process preserves most of the physical properties of the native porcine osteose tissue of THE Graft™. A large surface area is a key requirement for graft materials, and not only results in a larger surface region available for osteoblast cells attachment but also facilitates the exchange of nutrients and waste products, it allows greater amounts of blood, proteins, and growth factors to be absorbed onto the scaffold.

THE Graft™ has a high purity. The analysis result minimal residual protein, soft tissue, and organic bone matrix, proves that THE Graft™ is deproteinated enough for safe use.

Other than THE Graft™, such lower values for organic residues are only found with bone graft material treated at high temperatures which may cause the deterioration of the natural bone structure.

These results show that organic substances, including collagen and other organic compounds, were successfully removed from THE Graft™, which is thus not affected by issues associated with organic content. 

b Poncine bone softer than bovine?

THE Graft™ demonstrated a protein content lower than that of the natural bovine bone graft material. Bovine cancellous bone is Not Free of Zoonoses, such as BSE-Bovine Spongiform Encephalopathy. Porcine bone has a relatively low risk of zoonoses.

Less residual organic content for high purity

High purity means low organic matters

High Surface Energy

High Hydrophilicity

THE Graft™ Biocompatibility (3-4 s)

« Getting closer to human bone »

The Graft™ is structurally similar to human bone. It has high possible level of porosity combined with a natural interconnectivity.

Safe & Biocompatible

The combination of porcine origin with the high level of purity enables predictable bone growth without risking an immunogenic reaction. The high biocompatibility of THE Graft™ has been confirmed by an in-vitro cell study. THE Graft™ therefore encourages cell adhesion to the same extent as the established natural DBBM and offers optimal conditions for vital cell growth.

Porosity is an important factor in determining tissue-implant material integration. High porosity leads to a quicker absorption of liquids and cells spreading. THE Graft™ provides the optimized bone architecture for adhesion and tissue regeneration.
The Graft™ High Porosity

High porosity and early remodeling improve clinical performance.

The High porosity of The Graft™ means a quicker absorption of liquids (e.g., blood) in comparison with DBBM. This not only facilitates the application of the material but also leads to a quicker post-implantation incorporation.

High level of porosity was demonstrated with particle size distribution test and total porosity tests.

THE Graft™ Structure:

1. Macropores (diameter > 100 μm), are necessary to form blood vessels and induce both bone growth and reorganization around the graft material.

2. Micropores (diameter <10 μm), are required for the penetration of body fluids, ion transportation, the attachment of osteoblasts, and the precipitation of newly formed HA.

3. Nanopores, composed of sub-100-nm grains with a large amount of nanoscale pores present between the grains contrast.

Global porosity analysis:

- Human trabecular bone (~79.3%)
- The Graft™ ~ 78.4%

THE Graft™ Hydrophilicity

The Graft™ consists of a unique inter-connection pore system that ensures an efficient fluid intake and permits the migration of cells. This pore system and high surface energy enhance the osteoconduction process.

The SSA of the Graft™ was significantly larger than the values measured for the bovine bone. Considering that both the Graft™ and the bovine bone had a different surface morphology and pore size distribution with a substantial amount of nanoscale pores, we believe that this difference in the SSA was closely related to the nano/microscale structure of the bone graft materials.

The wettability of the Graft™ turned out to be higher than compared existing xenografts, which suggests that the Graft™ is relatively hydrophilic and can be easily wet by body fluids after implantation. Not only protein adsorption, but also the attachment, growth, and proliferation of various types of cells, including osteoblasts, have been reported to be significantly affected by the wettability of the material surface.

This high wettability of the Graft™ suggests that it may have advantages in terms of protein adsorption and the resulting cell adhesion and proliferation processes after implantation. The content of the organic component of the Graft™ was somewhat lower than compared existing xenografts.

Wetting mass of the graft materials as a function of time.

This result indicates that the wettability of the Graft™ was significantly higher than the bovine bone.
**LegoGraft™**

Biocompatible and safe natural bone grafting material. LegoGraft™ is just the science itself.

LegoGraft™, a form of block and ring composed of porcine derived bone mineral matrix from cancellous bone and articular cartilage from porcine tendon, is a material used to fill, augment, and/or reconstruct periodontal, oral, and maxillofacial defects. The bone mineral matrix is similar to physical and chemical aspects of mineralized matrix of human bone. Hydrated collagen components have viscosity that facilitates for blending bone mineral matrix. With this characterization, it can be trimmed and/or molded to the various shapes of defects and can be attached in bone defect site.

As time passes, LegoGraft™ is partially transformed by the osteoclast and osteoblast.

It is advantageous for shape and space maintenance.

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1. **Easily moldable**
   Made of 90% of THE Graft™ granules and 10% collagen, LegoGraft™ is easier to mold than THE Graft™ granules alone. Therefore, LegoGraft™ has better handling property compared to that of THE Graft™, making it possible to adapt grafting materials to various shapes of the defect site with more ease.

2. **Optimal osteoconductivity**
   While retaining better handling properties, LegoGraft™ is able to form sufficient porous tissue for implant placement and maintain natural volume and good adhesion property which lead to minimum chair time.

3. **Predictable clinical results**
   With great hydrophilicity, LegoGraft™ stabilizes the clot and aids in revascularization of the grafting material in the defect area to increase cell migration efficiency to the mineral substrate. As a result, fast bone formation can be expected, as well as a predictable clinical result.

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**Specification**

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Make smart decision with smart alternative!

OpenTex® Non-Resorbable PTFE Membrane is a pure medical-grade polytetrafluoroethylene (PTFE) sheet with inert biological features and predictable barrier effect. Due to the smooth surface and small pore size, OpenTex® PTFE Membrane resists the incorporation of bacteria into its structure and eases the removal of the membrane.

Non-resorbable membrane is sustainable for surgical procedure with no primary closure. OpenTex® Membrane is ideal for space-making feature providing enough space for host cells to adhere to grafting materials. OpenTex® is supplied sterile for single use only and available in various sizes. 10

The Evolution of PTFE Membrane

Non-Resorbable PTFE membrane

Indications

- GBR (Guided Bone Regeneration)
- Augmentation around implant placed in immediate extraction sites or delayed extraction sockets.
- GTR (Guided Tissue Regeneration)
- Filling of bone defects after root resection, removal of cysts, and removal of retained teeth.

Specifications

- Item No.: Size
- OpenTex_01: 24 mm x 30 mm
- OpenTex_02: 17 mm x 25 mm
OpenTex® Main Features

- **Non-Resorbable**
  - Promotes the growth of tissue attachment.
  - Enhances ease in the healing process.
  - Resists bacterial infection and histological rejection.

- **Microporous**
  - Rapid recovery of soft tissues.
  - Primarily non-toxic.
  - Virtually impermeable to bacteria, minimizing migration or obstruction from bacteria or biofilm formation in the event of exposure.

- **Minimally Invasive**
  - Protects the tissue regeneration process.
  - Replaces underlying tissue barrier to unwanted.
  - Provides an environment for the growth of vascular and osteogenic cells.

- **Withstands Exposure**
  - Resists irritation or reaction.
  - Resists bacterial or biofilm formation.

OpenTex® Benefits

- **Soft Tissue Obtaining**
- **Aesthetic Implant Restoration**

OpenTex® Strengths

1. **Stability**:
   - Non-resorbable PTFE Membrane offers enough healing time to bone regenerative process.

2. **Biologically inert**:
   - PTFE is soft tissue-friendly so it is ideal material as a barrier for bone regenerative process.

3. **Withstands exposure**:
   - PTFE Membrane withstands to exposure since it is impervious to bacteria due to their barrier function.

Characteristics of OpenTex®

- **Impervious to Bacteria**
  - Most of Oral Bacteria is larger than 1μm. OpenTex® is micro-porous material that has the pore size small enough to prevent bacterial infiltration.

- **Biocompatible**, OpenTex® facilitates cell adherence on the surfaces.

  Test performed shows that the surface of OpenTex® is not toxic causing cells to adhere well on the surface.

- **24 Hours for five cells adhesion cases on OpenTex® surface**
  - SEM: Scanning Electron Microscope

The matters is POORE SIZE
OpenTex®-TR

Membrane is composed of 100% polytetrafluoroethylene (PTFE) sheet and grade 1 titanium frame, which are biologically inert and tissue compatible.

OpenTex®-TR Non Resorbable PTFE Membrane with titanium frame is designed to have a suitable surface structure and porosity to prevent integration and passage of bacteria within the interstices of the material, while maintaining space for host cell adhesion to the device.

OpenTex®-TR provides a favorable environment for neovascularization and healing of defects, through repopulating the bone derived cells and protecting the bony defects from migration of the gingival tissue derived cells.

Since the adequate space maintenance is critical to this procedure, the membrane is sufficiently stiff to prevent spontaneous collapse, but also flexible enough to easily conform to tissue contours and reduce perforations of overlying soft tissue. (1)

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**Indications**

01. Extraction socket reconstruction
02. Bone regeneration
03. Where primary closure isn’t possible

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**Specifications**

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(1) Clinical evaluation of vertical ridge augmentation using titanium-mixed PTFE membrane, Department of periodontology, Dental Hospital, Seoul National University, Seoul, Korea. The Korean academy of oral maxillofacial prosthology, Vo.25, No.1, 2019.
OpenTex®-TR Main Features

Non-Resorbable

Minimally Invasive

Optimal Rigidity For Space Maintenance

OpenTex®-TR Benefits

1. Optimal rigidity and strength for space making. OpenTex®-TR is optimal product which is able to be trimmed easily and it is solid enough for space making since it is reinforced with titanium frame.

2. Diverse embedded titanium frame. OpenTex®-TR is designed in various shapes to meet surgeon’s demand.

3. Excellent tissue interaction. Its micro porous structure helps the tissue interaction.

4. Easy of use. OpenTex®-TR can be trimmed easily and also removed easily.

Characteristics of OpenTex®-TR

- Membrane can be molded and shaped for tenting and space maintenance.
- The rigidity of the membrane is enhanced to be used for space maintenance.
- Provides additional stability in large, non-space-making osseous defects.
- Provide with little memory of titanium frame, which enables easy placement of the membrane.
- Ability to withstand exposure.

PTFE sheet

Grade 1 Titanium
Minimal memory, No tangle, and Superior handling

Biotex® Non-Resorbable PTFE Suture is comprised of a single-arm, non-resorbable monofilament suture with a stainless-steel surgical needle connected to the suture. The suture is uncoated, undyed and sterile for single use only, composed of 100% PTFE.

- SOFT HANDLING
- BIOLOGICALLY INERT
- NO TANGLE
- EASY KNOTTING

Specifications

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Indications
- Bone grafting procedures
- Periodontal surgery
- Guided tissue regeneration
- Ridge augmentation
- Implant surgery
- Soft tissue grafts
Suture
1. High pliability (PTFE)
   - Tying and bending more at ease with less unintended loosening.
2. No room for little plaque.
   - It dispels the possibility of any bacterial infection as well as the plaque formation and any other factors that prevent healing process.

Needle
1. Slim reverse cutting needle tip
   - Precision slim cut triangular needle for small penetration area and smooth suturing.
   - Minimize damage to surrounding soft tissue.

2. Strong Attachment
   - Advanced technology for strong needle attachment.
   - Smooth and firm connection between needle and thread.
   - Rapid healing process due to the reduced bleeding from needle-insertion.

3. Strong Needle
   - 53% higher strengths are required to bend needle in same degree compared to other product.
   - High rigidity of the needle resists to bent stress during suturing.

Benefits
- Soft and comfortable for patients
- Soft texture for patient comfort
- Reliable closure period
- Superior handling provides flexibility in the positioning of a square knot. Easy to tie – Easy to remove
- Nonwicking: Elimination of bacterial wicking usually associated to monofilament
- Maintains tensile strength
- PFOA free

Needle holding clip
Designed to hold the needle in place, also allows for secure and easy release of the suture needle from its package.

Sturdy & Flexible
Transparent Cover
Protect and give clear visibility of suture and needle. Soft and sturdy cover effectively protect the suture.

Tab
Allows surgeon to easily grasp and remove the suture needle from its needle holder clip.

Three Track shape
Designed to prevent suture from entangling and allows easy release of the suture.
Adaptable Resorbable Collagen Membrane

BioCover™ is a resorbable collagen membrane consisting of porcine tissues which are similar to human collagen phylogenetically. BioCover™ resorbable collagen membrane offers excellent handling, easy adaptation to bone graft materials and less time consumption in surgery.

- FLEXIBLE & ADAPTABLE
- STRONG ENOUGH FOR SUTURE
- CROSSLINKED FOR DESIRED BARRIER DURABILITY

Specifications

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Benefits

- Biocompatible and safe
- Excellent Handling
- Great tissue adhesion
- Cell occlusive
- Strong enough to suture

Indications

BioCover™ is intended for use in periodontal and dental surgery procedures as a material for placement in the area of periodontal defect, dental implant, bone defect or ridge reconstruction to aid in wound healing post surgery.

Considering BioCover™ indications and resorption time, it is recommended to combine the membrane with bone graft to new bone healing by osteoconduction (MHE) Graft™.