BIOTECK®

ZYMO-TECK® BONE

The next generation of natural bone grafts

FROM THE ZYMO-TECK® PROCESS

The next generation of natural bone grafts

WE HAVE INVENTED NATURE-ENHANCING TECHNOLOGY

The great step forward in the world of bone grafts was the invention of a process capable of producing a perfectly biocompatible heterologous tissue, without alteration to the physical and morphological characteristics of the tissue of origin and the components of the extracellular matrix, including bone collagen in its native conformation.

We patented this process in 2012 with the name Zymo-Teck®, the only real enzyme-based process for the treatment of tissue and bone substitutes.

SUPERIOR QUALITY RAW MATERIAL

ENZYMATIC DEANTIGENATION

ELIMINATION OF VIRUSES AND BACTERIA

BETA RAY STERILISATION

THE RESULT: ZYMO-TECK® BONE

A safe and very high quality tissue, with a combination of unique characteristics proven to be the best alternative to autologous bone for use in regenerative surgery.

WHY ZYMO-TECK® BONE IS UNIQUE WHEN COMPARED TO OTHER EXISTING TISSUES

IT IS MORE NATURAL

compared to synthetic products and to heterologous products treated with chemical solvents or calcined. The enzymatic treatment makes it possible to preserve the extracellular matrix of the tissue, the mineral component and the bone collagen in native form, without the risk of accumulating chemical residues[1].

IT IS MORE STANDARDISED

compared to homologous grafts[2]. Zymo-Teck® Bone is produced by way of controlled processes and precision instruments that enable high level reproducibility in dimensions, mechanical resistance and biological characteristics.

ACCELERATES HEALING

The preserved mineral structure and collagen reduce bone regeneration times compared to synthetic and calcined products[3,4].

IT IS BIOMIMETIC

Unlike synthetic or heterologous bone substitutes obtained though thermal treatment, Zymo-Teck® Bone is the result of technology capable of preventing the alteration of the natural regeneration kinetics of tissues[5] and accommodates total substitution with new vital bone tissue.

ZYMO-TECK® BONE

1 Standardised in all its characteristics

QUALITY SUPPLY CHAIN

Zymo-Teck® Bone is produced from equine bone, a tissue that has many similarities to human bone at a morphological, mineral and biological level[6]. The tissue originates in animals selected within the European Community and is monitored by veterinarians in order to guarantee quality and maximum safety.

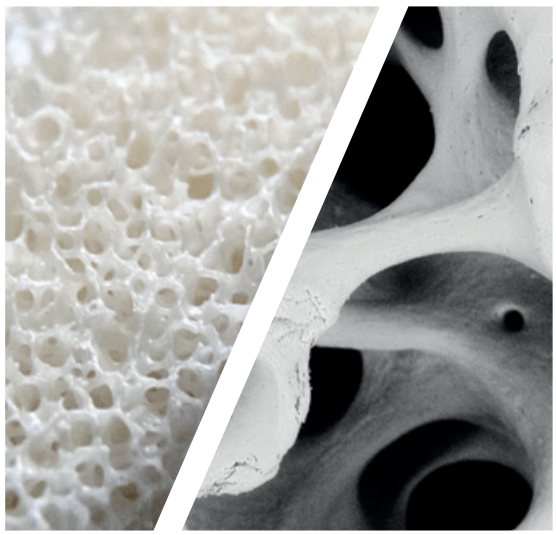
TOTALLY BIOCOMPATIBLE

Zymo-Teck® Bone is a totally biocompatible bone tissue, having successfully passed all tests required by the international reference standard ISO 10993.

THE IDEAL STRUCTURE FOR NEW BONE FORMATION

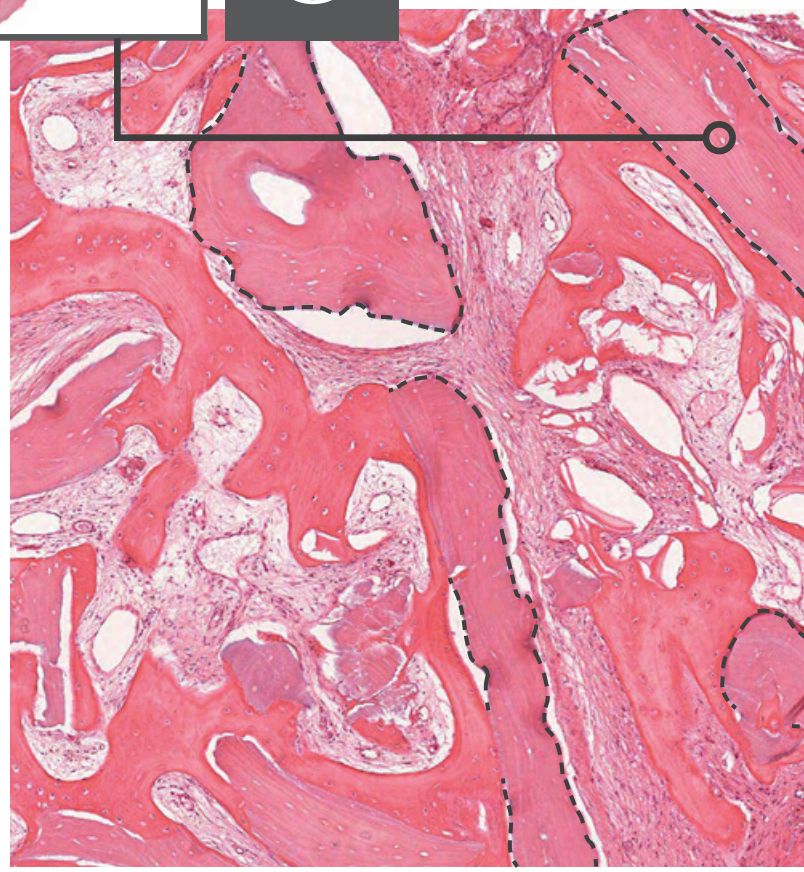
Scientific studies demonstrate how Zymo-Teck® Bone is very similar to human bone in trabecular dimensions and porosity[7]. This guarantees increased hydrophilicity, facilitates the growth of new blood vessels and enables excellent cellular adhesion.

The natural structure of Zymo-Teck® Bone seen under a microscope.



Grafted biomaterial

In the early months after grafting, the granules of Zymo-Teck® Bone are still visible.



1. *Pagnutti et al. 2007, Biotechnol. & Biotechnol. Eq.*
2. *Mohr et al.2016, Cell Tissue Bank.*
3. *Di Stefano et al. 2015, JOMI.*
4. *La Monaca et al. 2018, Biomed Res Int.*

2 Completely biological

NATURAL COLLAGEN IS PRESERVED

Bone collagen supports all tissue regeneration processes and provides tissue with elastic mechanical resistance properties. Within Zymo-Teck® Bone, bone collagen is preserved in its natural conformation[8] so that it can fully engage its properties.

AN IDEAL WAY TO PROMOTE VASCULARISATION

The three dimensional structure of the tissue and the presence of macro- and micro-pores create a natural substrate that is ideal for vascularisation. Scientific studies demonstrate how cells exposed to Zymo-Teck® Bone express VEGF growth factor which promotes the development of blood vessels[9].

Biomaterial integrated into the vital bone tissue

Zymo-Teck® Bone is physiologically recognised by osteoblasts (*) and osteoclasts (°)

Histological image of human bone tissue grafted with Zymo-Teck® Bone.

5. *Perrotti et al. 2009, Clin Oral Implants Res.*
6. *Weiner et al. 1998, Relations Annu Rev Mater Sci.*
7. *Bedini et al.2013, Key Engineering Materials.*
8. *Di Stefano et al. 2019, Dentistry Journal.*

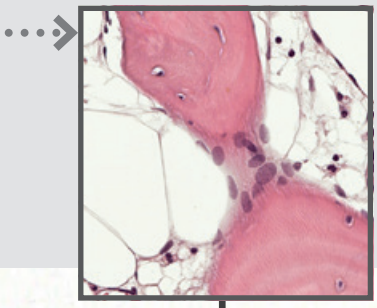
3 Integrates until disappearing

IT IS BIOMIMETIC

The enzymatic treatment does not alter the physical properties of the bone tissue. Once grafted to the surgical site, Zymo-Teck® Bone is accepted by the body and does not interfere in the natural healing process.

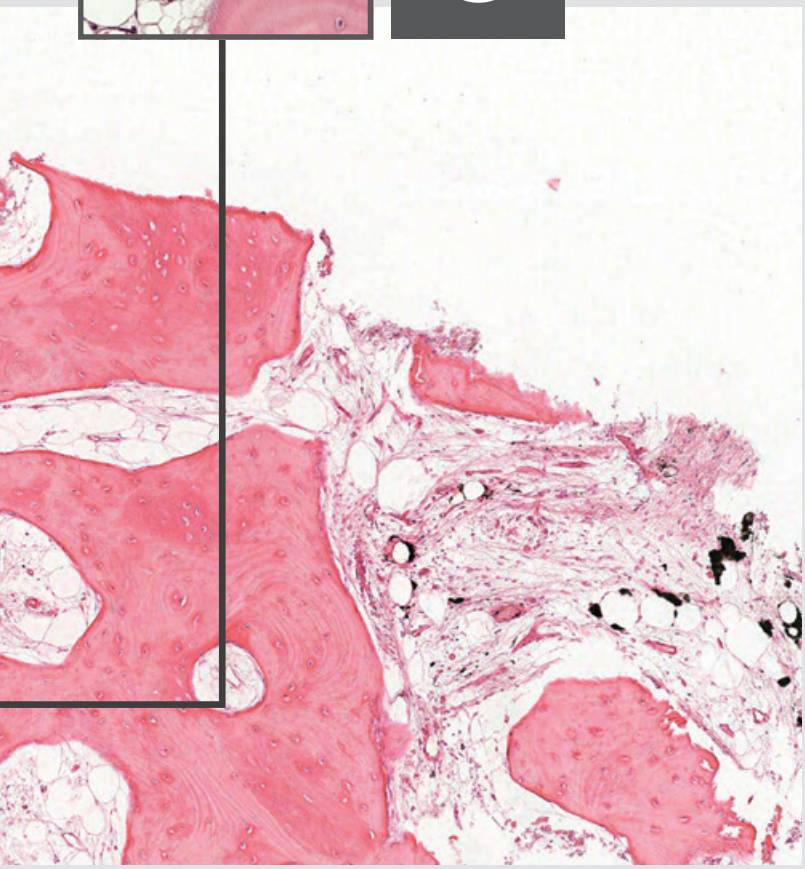
VOLUME PRESERVED WITH VITAL BONE

Zymo-Teck® Bone accommodates physiological remodelling. This means that the volume of the grafted site will gradually be occupied by the patient's own bone, maintaining volume by means of vital tissue as opposed to residual material.

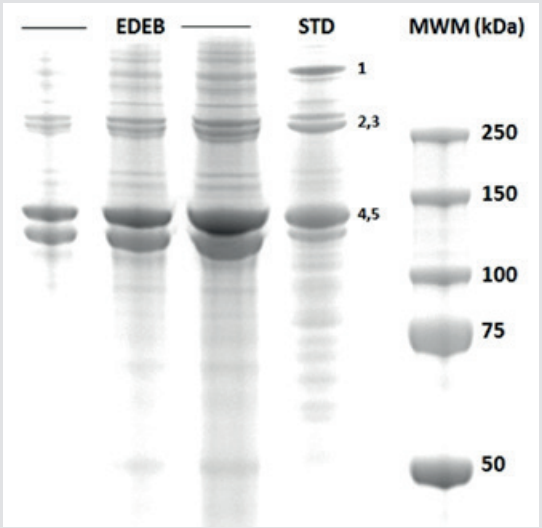


Biomaterial Completely replaced

When remodelling is complete, Zymo-Teck® Bone is totally replaced by new vital bone.



Visualisation of the proteins found in Zymo-Teck® Bone (EDEB columns). The profile obtained corresponds to bone collagen ("STD" column).



9. *Artese et al. 2012, IOS.*
10. *www.bioteckacademy.com/en/publications/*
11. *Cusinato et al. 2016, J Virol Methods.*

RESULTS

DOUBLES THE QUANTITY OF NEW VITAL TISSUE

in comparison to heterologous thermally treated grafts[3,8].

SUBSTANTIATED CLINICAL EFFECTIVENESS

OVER 1,600,000 PROCEDURES
successfully carried out in dentistry, orthopaedics and neurosurgery in 72 countries around the world.

OVER 300 SCIENTIFIC PUBLICATIONS
in the field of basic research/dentistry/orthopaedics and neurosurgery[10].

MORE THAN 2,000 SURGERIES
documented in literature.

UP TO 13 YEARS
of scientifically documented Follow-up.

NO CONTAMINATION RISK

Zymo-Teck® Bone is a thoroughly sterilised product.
To date, it is the only bone substitute whose treatment process has been examined in literature due to its effectiveness in viral inactivation and elimination[11].

ZYMO-TECK® BONE IS THE CORE OF OUR PRODUCTS

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DENTISTRY

Osteoxenon®
Bone grafts with preserved collagen.

DENTISTRY

Bio-Gen®
Bone grafts with hydrolysed collagen.

DENTISTRY

Osteoplant®
Bone grafts with preserved collagen.

DENTISTRY

Activabone®
Collagen bone pastes with modulated viscosity.

ORTHOPAEDICS
NEUROSURGERY

Osteoplant®
Bone grafts with preserved collagen.

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Collagen bone pastes with modulated viscosity.

BIOTECK®.
INNOVATE BIOMATERIALS.

Bioteck® is an Italian company that has been producing bone substitutes and protective membranes successfully used in orthopaedics, neurosurgery and oro-maxillo facial surgery since 1995.
Scientific research and innovation are the guiding principles that have enabled Bioteck® to patent new production processes and to create unique biomaterials of high quality in terms of performance level and safety guarantees. Materials now used in 72 countries worldwide.
At its multi-functional centre for research and development and thanks to state-of-the-art production processes, every day **Bioteck®** works to pursue its key objective: to innovate biomaterials.

WWW.BIOTECK.COM

BIOTECK ACADEMY.
SCIENTIFIC COMMUNITY FOR THE CULTURE OF THE CONSCIOUS CHOICE.

Bioteck Academy is the innovative and unique scientific community which promotes the circulation and sharing of knowledge in the field of tissue regeneration applied to dentistry, maxillo-facial surgery, orthopaedics and neurosurgery.
Established as a hub for the clinical and scientific expertise focussed on by **Bioteck®** spanning twenty years of research, today it is an entity open to all professionals who decide to join and share their own surgical experience.

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CSQ ISO 13485

BIOTECK®

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