

reconstructive surgery

biocade®

Collagen Matrix for
Soft Tissue Reconstruction



biotrics
BIOIMPLANTS

biotrics **BIOIMPLANTS**

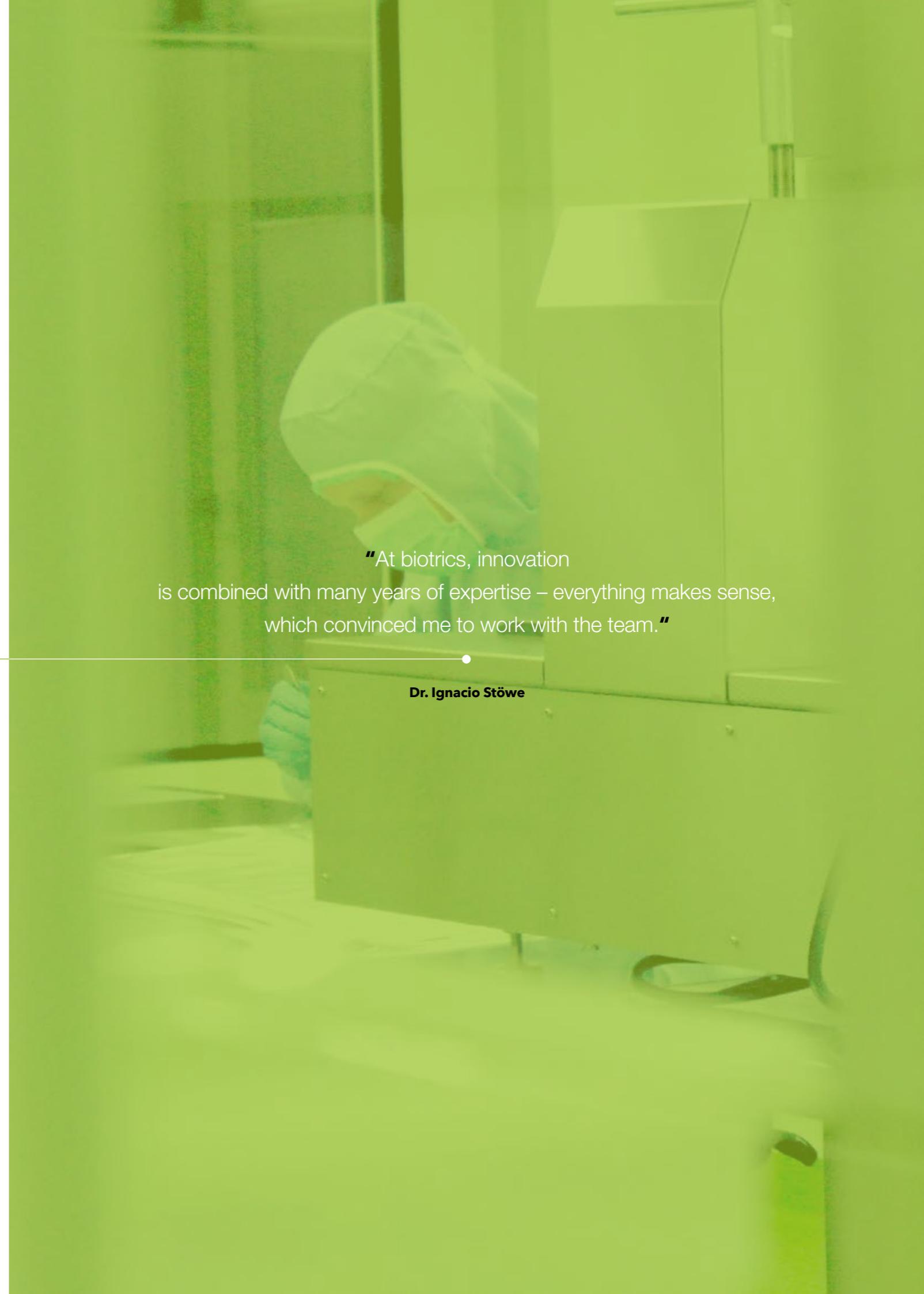
biotrics bioimplants AG is a private, German, biomedical company, specialized in clinical regeneration of human bone and soft tissues. biotrics develops, produces and markets innovative and established regeneration matrices made of collagen and magnesium for various surgical applications.

Our innovative, indication-optimized technologies and products are based on many years of academic and industrial research, together with leading clinicians, research institutes and universities. All products are manufactured in our own factory in Berlin-Tempelhof under highest quality and scientific standards and are accordingly certified.

Our expertise lies in the biological functionality, safety and reliability of our products – leading to reliable treatment.

As an innovative biotech company, we invest substantially in research, production and clinical exchange – The result is innovative products such as biocade® and biocade® dura.

Join us on our mission “Regenerate instead of substitute”. We invite you to share your experiences, suggestions and also criticisms with us. Together we can develop new product and treatment concepts that will optimally support you in your daily clinical challenges.



“At biotrics, innovation is combined with many years of expertise – everything makes sense, which convinced me to work with the team.”

Dr. Ignacio Stöwe

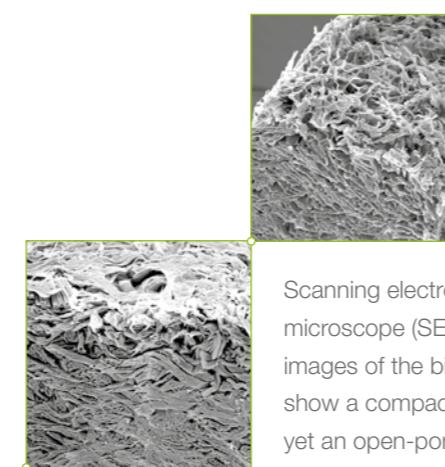
biocade®

biocade®:
in rehydrated state
extremely tear resistant
and flexible

Integrative collagen matrix for plastic and reconstructive Surgery

The biocade® collagen matrix was designed to optimally support surgeons in their daily challenges in hernia repair and breast reconstruction.

Therefore, biocade® is not only easy and broadly applicable in plastic and reconstructive surgery, but also offers reliable biological functionality.



Scanning electron microscope (SEM) images of the biocade® show a compact but yet an open-pore collagen network for early cell migration and revascularization



PROPERTIES

- Native, porcine collagen matrix similar to human dermis
- No preservatives or cross-linking agents
- Rapid healing due to early cell migration and revascularization
- Short rehydration
- Extremely tear resistant, yet flexible and malleable
- Easy handling, securely suturable

**Due to its compact structure
biocade® is characterized by a
long resorption profile.**

breast reconstruction

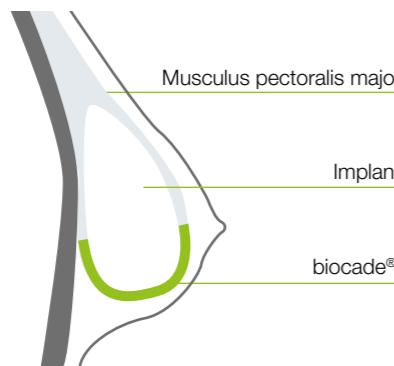
Collagen – An essential component of tissues

biocade® is versatile and can be used in a wide range of indications – especially in the case of breast reconstruction when a weak subcutaneous fat tissue has to be strengthened

biocade® is also excellently suitable for hernia repair

Excellent integration

After implantation of biocade®, regenerative cells are attracted and their proliferation and migration is promoted by the native collagen. biocade® serves as a scaffold structure for the formation of new soft tissue and is completely resorbed.

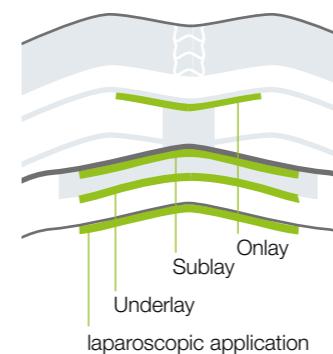


“Due to their high biocompatibility and excellent biomechanical properties, I expect collagen matrices such as biocade® to be a safer and more patient-friendly and tolerable alternative to synthetic meshes.”

Dr. med. Alba Fricke

Impressive biomechanical strength

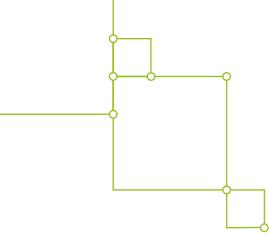
biocade® can be used with standard hernia repair techniques. Since biocade® does not stick to itself, it is even suitable for laparoscopic placement.



“Reliable and safe collagen matrices that do not require any crosslinkers or preservatives and achieve the best outcome for my patients – that is what I wish for!”

Dr. med. Juri Wagner

hernia repair



biocade®

From the product idea
to the certified product –

**EVERYTHING FROM
A SINGLE SOURCE.**

At biotrics we combine more than 10 years of experience in the development and production of collagen matrices. Our development always follows the needs of the user and is adapted to the clinical requirements.

“Our tissues consist largely of collagen - so for me, alternative collagen matrices that are similar to this tissue are “indispensable” in order to achieve physiological integration of the replacement material and healing with few complications and thus regeneration.”

Dr. rer. nat. Mike Barbeck

Dermis:

highest collagen content, highest stability

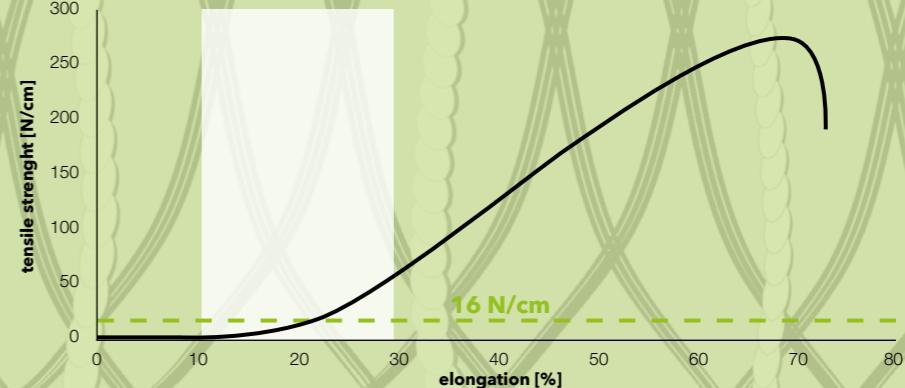
PRESERVATION OF THE OUTSTANDING PROPERTIES of porcine dermis

Our unique manufacturing process specifically isolates the collagen-containing layers of skin and gently removes all non-collagenous components of the dermis (e.g. foreign proteins, bacteria, viruses, etc.). This preserves the native collagen structure and maintain the very high tear resistance. The deliberate avoidance of artificial crosslinking agents and preservatives ensures the proven tissue-friendliness of biocade®.

TENSILE STRENGTH

The tensile tests show that biocade® provides sufficient tensile strength to withstand physiological stress.

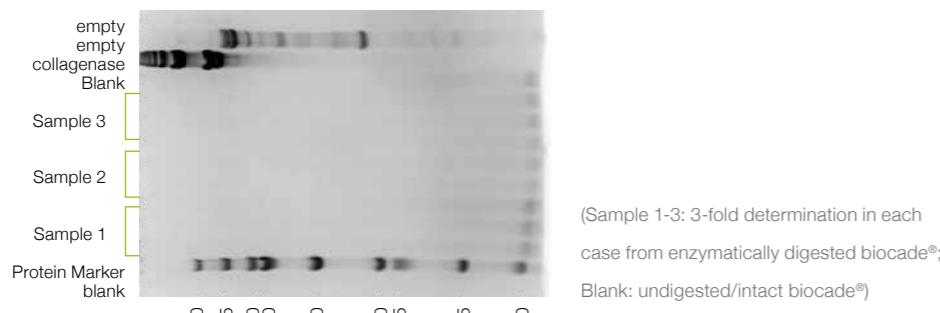
$$\text{tensile strength } R_m = \frac{\text{maximum tensile force } F_{\max}}{\text{cross-sectional area } S_0}$$



With $23.4 \pm 9.2\%$ elongation at 16 N/cm , the rehydrated biocade® fulfills the elongation criterion of 10 - 30% elongation established for hernia meshes.

Free from foreign proteins

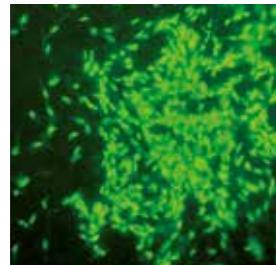
Proof of protein purity (SDS-PAGE) of biocade®



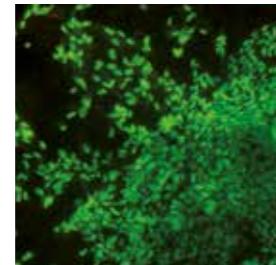
Good integration and long absorption profile

biocade®

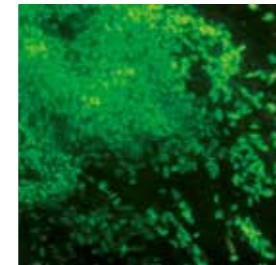
Biocompatibility and cell migration



Gingival fibroblasts on similar product

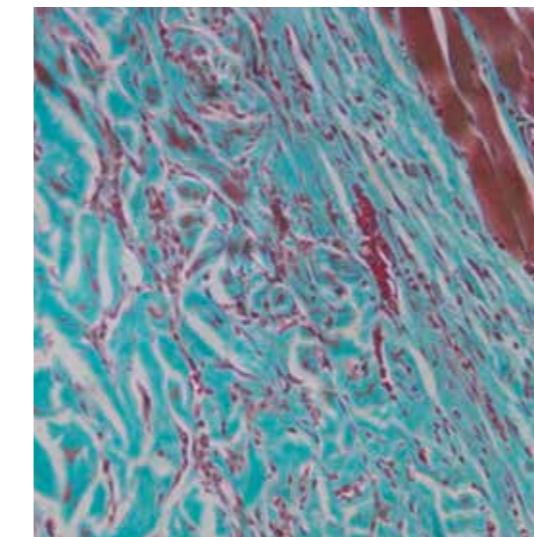
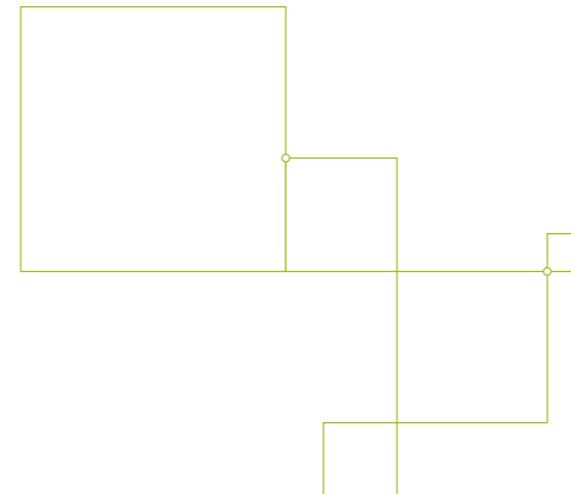


Human endothelial cells (HUVEC) on similar product

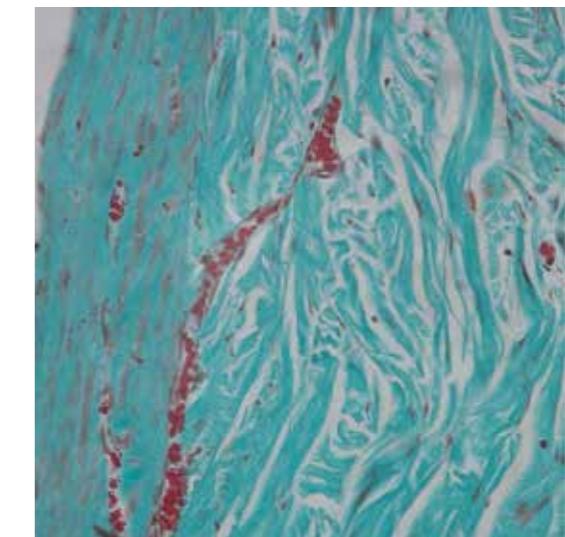


Osteoblasts on similar product

Pabst AM, Happe A, Callaway A, et al. In vitro and in vivo characterization of porcine acellular dermal matrix for gingival augmentation procedures. *J Periodontal Res.* 2014 Jun;49(3):371-81

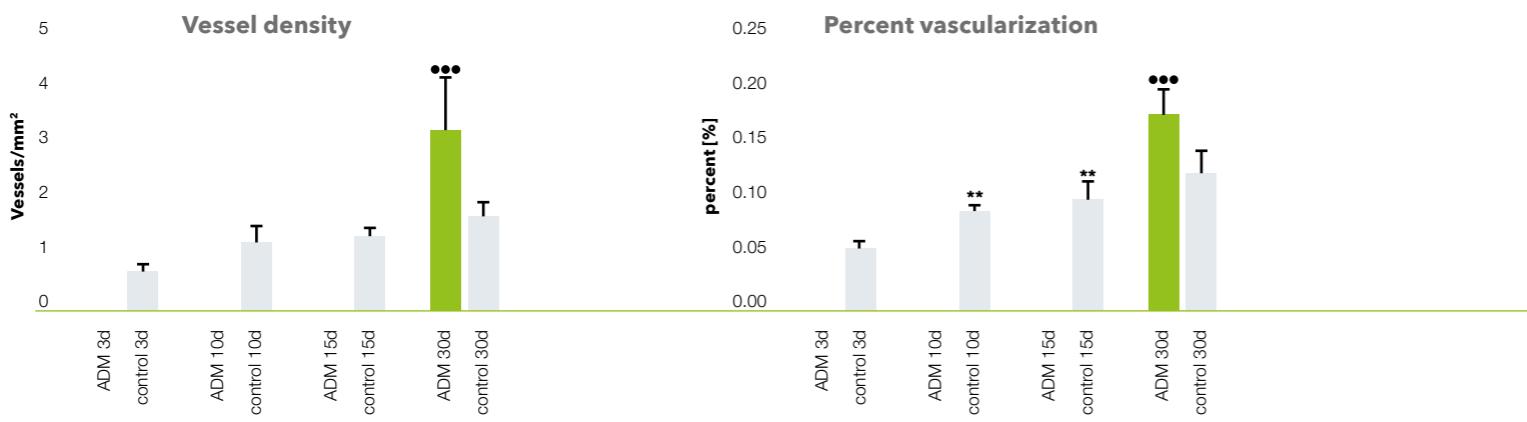


Acellular dermal matrices (ADM) such as biocade® show cell ingrowth and good tissue integration in vivo after just two weeks.



After 12 weeks, the ADM is fully integrated into the recipient tissue and is free of inflammation.

Early vascularization



ADM = acellular dermal matrix, ** = p-value < 0.01 compared to ADM (same time point); *** = p-value < 0.001 compared to previous time point.

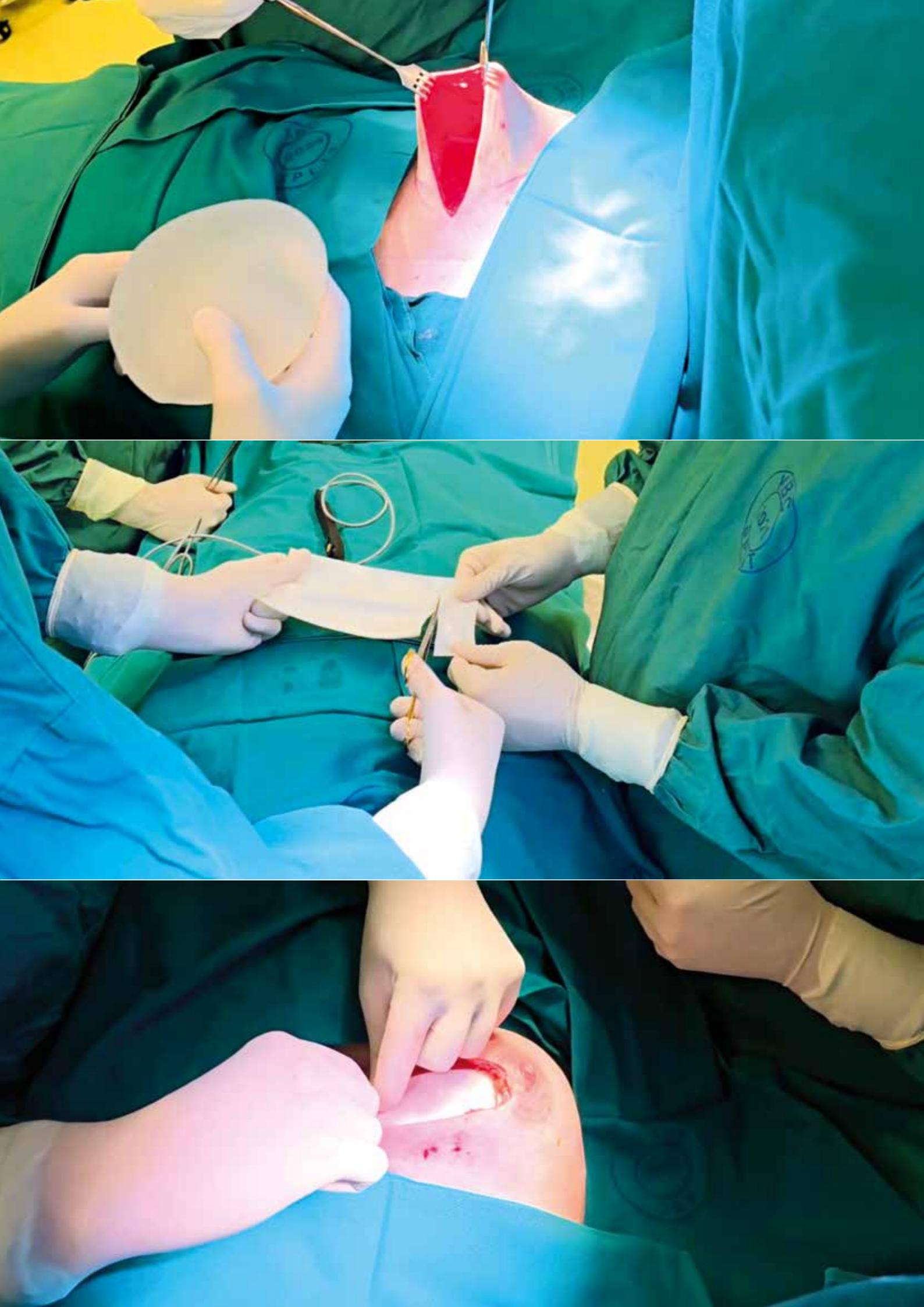
Adapted with permission: Barbeck M, Lorenz J, Kubesch A, et al. Porcine Dermis-Derived Collagen Membranes Induce Implantation Bed Vascularization Via Multinucleated Giant Cells: A Physiological Reaction? *J Oral Implantol.* 2015 Dec;41(6):e238-51.

In vivo studies demonstrate the successful vascularization and early integration due to the open-pored structure of freeze-dried ADMs such as biocade®.

Case 1 | Patient: f, 69 years old

Skin and nipple mastectomy (NSM) with implant-based primary breast reconstruction following breast cancer treatment with radiotherapy.

The breast pocket is held open by two retractors in preparation for prepectoral insertion of the silicone implant.

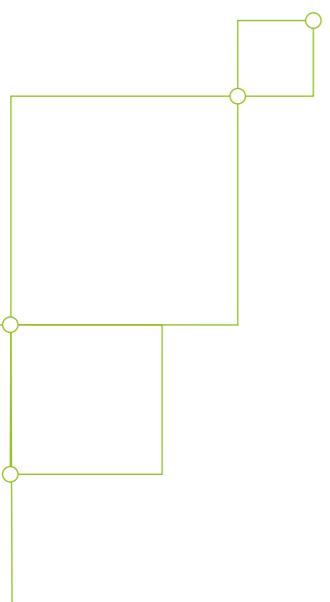


Postoperative:

The healing process was uneventful and progressed without complications.

Rehydrated biocade® is trimmed to the appropriate size before implantation.

biocade® is then placed immediately beneath the surgical site and prior to insertion of the silicone implant. It supports healing of the suture line and helps prevent wound dehiscence, particularly in cases involving large implants.



Case 2 | Patient: f, 62 years old

Unilateral implant-based breast reconstruction after nipple-sparing mastectomy due to breast cancer.



Open left breast site, typical incision under the nipple. The breast implant is already placed.



biocade® inserted into the site and placed over the breast implant.



Implanted biocade® covering the breast implant.

Postoperative:

The healing process was uneventful and progressed without complications.

Case 3 | Patient: f, 55 years old

Unilateral implant-based breast reconstruction after nipple-sparing mastectomy due to breast cancer.



Open left breast side – the large pectoral muscle is clearly visible.

biocade® rehydration allows easy wrapping around the breast implant. To build a pocket, biocade® was sewn together by simple stiches.



biocade® used in wrap-technique ready to implant.



biocade®, wrapped around the breast implant, simply inserted into the breast site without fixation.



Implanted and finally placed biocade® wrapped around the breast implant.



Breast directly after breast reconstruction with biocade®.

Postoperative:

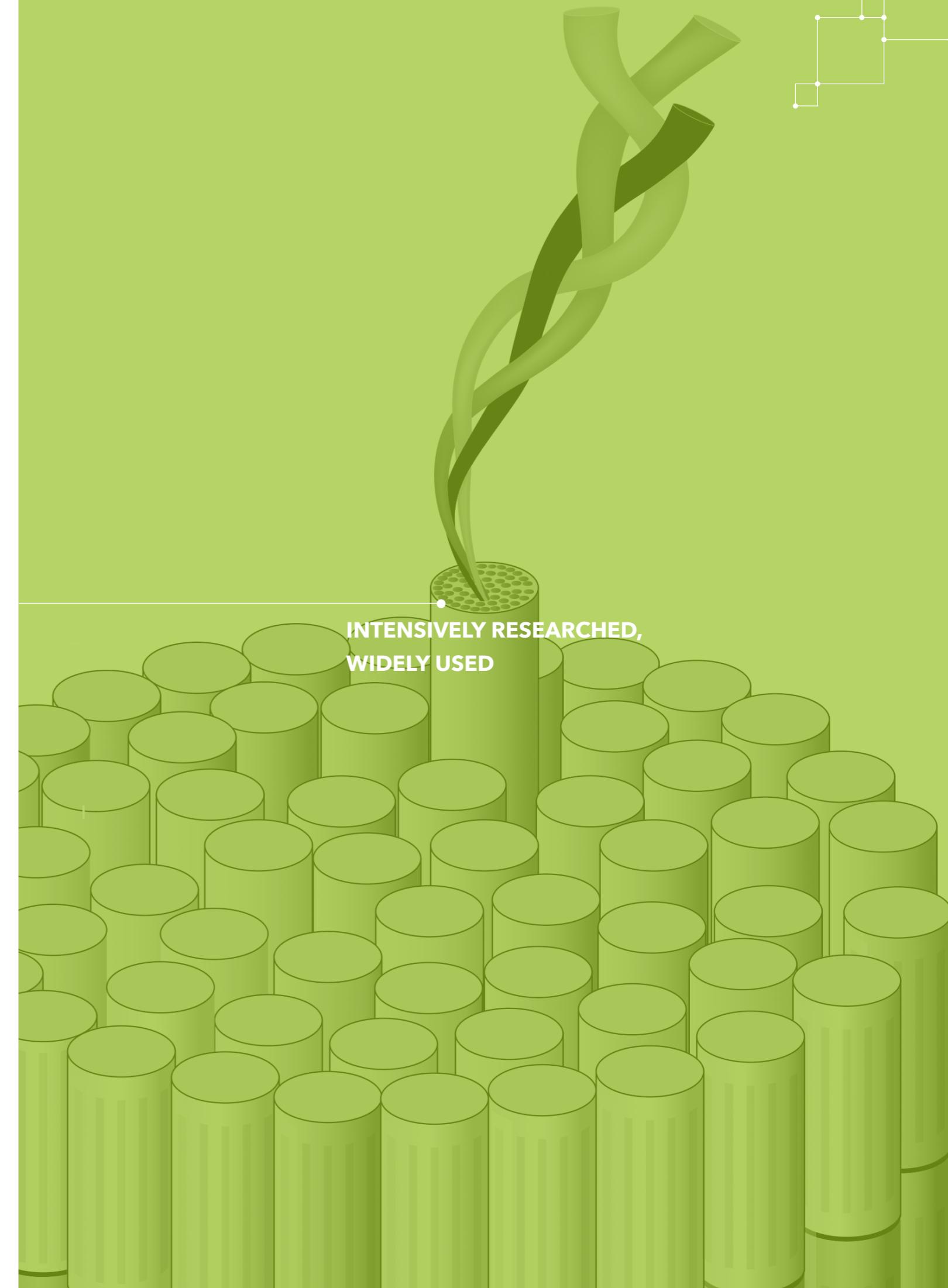
The healing process was uneventful and progressed without complications.

See biocade® publication for further information:
Banović J, Pribidić Z, Madir MB, Beara V, Perić L, Čandrić M, Kačarević ŽP. Direct-to-Implant Prepectoral Breast Reconstruction with a Novel Collagen Matrix Following Nipple-Sparing Mastectomy: A Case Report. Reports. 2025; 8(3):120. <https://doi.org/10.3390/reports8030120>

Porcine Dermis **AS BIOMATERIAL**

> 37 SCIENTIFIC AND CLINICAL PUBLICATIONS

Publications for integrative collagen matrices from porcine dermis



INTENSIVELY RESEARCHED,
WIDELY USED

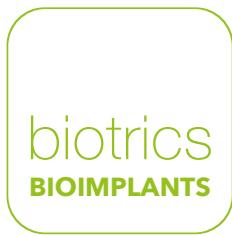
biocade®

collagen matrix
for soft tissue reconstruction

Art. No.	Dimension	Content
740001	2 x 3 cm	1 Membrane / Matrix
740002	3 x 4 cm	1 Membrane / Matrix
740003	5 x 5 cm	1 Membrane / Matrix
740004	5 x 10 cm	1 Membrane / Matrix
740010	4 x 16 cm	1 Membrane / Matrix
740005	8 x 16 cm	1 Membrane / Matrix
740006	10 x 10 cm	1 Membrane / Matrix
740007	10 x 20 cm	1 Membrane / Matrix
740009	20 x 20 cm	1 Membrane / Matrix
740008	20 x 30 cm	1 Membrane / Matrix

Product thickness 1.2 to 1.7 mm

Flexible solutions
for all needs



Innovation. Regeneration. Strictly biologic.

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