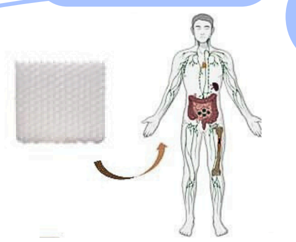
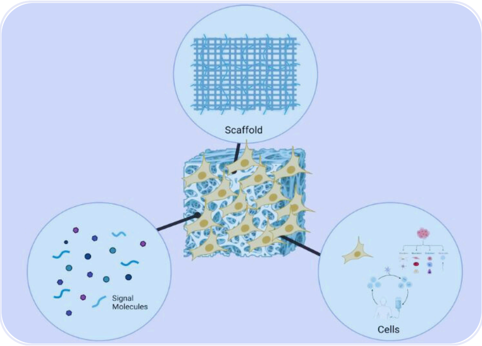
## HOW BLOOCELL WORKS

- Biocompatibility
- Reducing the risk of adverse reactions
- Tailored mechanical properties
- Reduced Tissue Rejection
- Controlled Release
- Biodegradable
- Porosity Structere
- Customizable



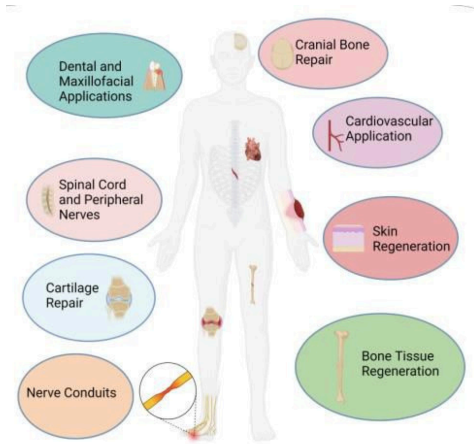



**1 – PCL:** To mimic the architecture and function of natural tissues.

**2 – TCP:** Promotes the adhesion of osteoblasts, the bone-forming cells, and encourages their activity, ultimately leading to new bone formation.

**3 – HA:** Ability to support cell adhesion, migration, and proliferationa

## CURRENT USE OF BLOOCELL®



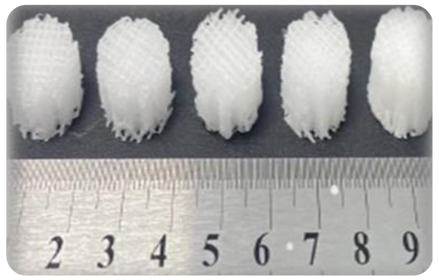

### Defect Side

- Load bearing capability
- No immune response
- Biodegradable
- Cell attachment, new tissue formation
- Mineralization

## MECHANICAL TESTING

### DESIGNS BASED ON;

- Tissue Type
- Defect Field
- Defect Depth
- Defect Size



| Specimen | Ultimate Force [N] | Max. Xhead [mm] | Yield. Force [N] | Yield. Xhead [mm] | Ultimate Strength [Mpa] |
|---|---|---|---|---|---|
| A | 314,57 | 3,32 | 180,09 | 1,14 | 4,01 |
| B | 268,78 | 3,28 | 169,35 | 1,17 | 3,42 |
| C | 286,85 | 3,33 | 162,87 | 1,06 | 3,65 |
| D | 291,42 | 3,31 | 171,14 | 1,11 | 3,71 |
| E | 300,00 | 3,32 | 166,48 | 1,03 | 3,82 |
| **Mean** | **292,32** | **3,31** | **169,99** | **1,10** | **3,72** |
| **Std. Dev** | **16,87** | **0,02** | **6,46** | **0,06** | **0,22** |

**Table 4:** Max. Load Determined at the Static Test

**Bloocell Scaffolds**
**Ability to mechanically mimic natural tissue**

## GRAFT vs BIOSCAFOLD

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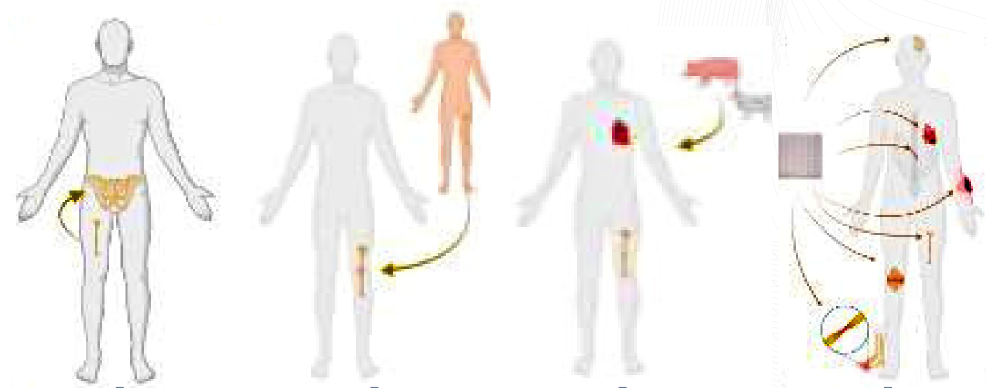


### AUTOGRAFT

Lower risk of infection
There is no risk of graft rejection
- Limited availability and more than one surgery is required.
- No Mechanical testing
- Weakening of the donor site
- Risk of site morbidity, pain, infection and scarring

### ALLOGRAFT

Greater availability than autograft
Minimizing surgical time
- Risk of immunological rejection
- Risk of disease transmission
- Risk of site morbidity, pain, infection and scarring
- Limited donor pool
- No mechanical testing

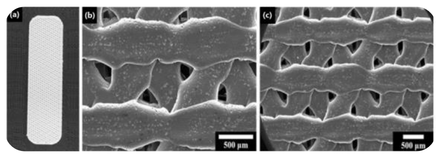
### XENOGRAFT

Potential for greater availability
Variety of tissues
- Extremely high risk of rejection
- Ethical concerns
- Risk of zoonotic diseases

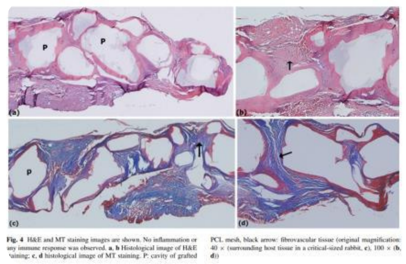
### BIO SCAFOLD

Mimicking the Natural Extracellular Matrix (ECM)
Mechanical Support
Tissue regeneration, making them versatile for various applications
Customized in terms of material, shape, porosity, and other properties
Drug or Growth Factor Delivery
Temporary Support and Gradual Degradation

## CLINICAL BACKGROUND OF SCAFOLD



Park et al. Clinical Application of Three-Dimensionally Printed Biomaterial Polycaprolactone (PCL) in Augmentation Rhinoplasty, Aesthetic Plastic Surgery



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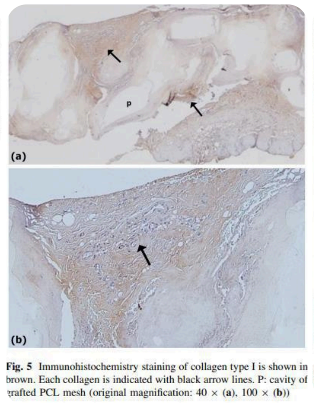
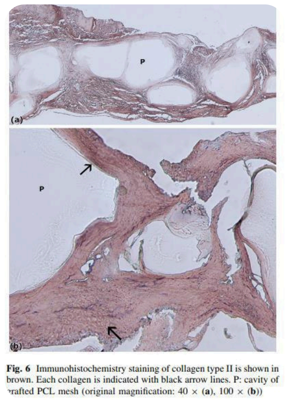
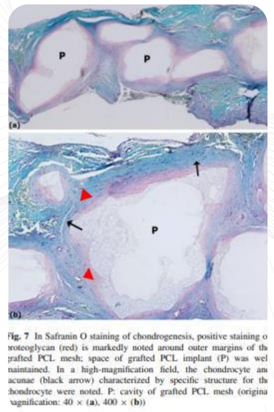


Clinical Application of Three-Dimensionally Printed Biomaterial Polycaprolactone (PCL) in Augmentation Rhinoplasty



Park et al. Clinical Application of Three-Dimensionally Printed Biomaterial Polycaprolactone (PCL) in Augmentation Rhinoplasty, Aesthetic Plastic Surgery

## CLINICAL BACKGROUND OF SCAFOLD

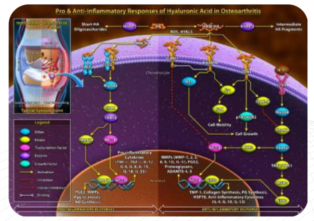


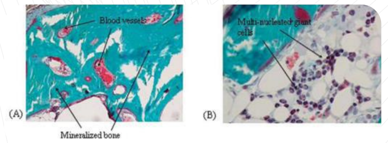
**Cartilage Tissue Formation**

Park et al. Clinical Application of Three-Dimensionally Printed Biomaterial Polycaprolactone (PCL) in Augmentation Rhinoplasty, Aesthetic Plastic Surgery

**Mineralization PCL/TCP**

Yeo et al. Surface Modification Of PCL-TCP Scaffolds In Rabbit Calvaria Defects: Evaluation Of Scaffold Degradation Profile, Biomechanical Properties And Bone Healing Patterns, Journal Of Biomedical Materials Research





**Anti-inflammatory Effect of HA**

Altman et al. Anti-Inflammatory Effects of Intra-Articular Hyaluronic Acid: A Systematic Review, Sage Journal

### Bloocell Simulation Laboratory

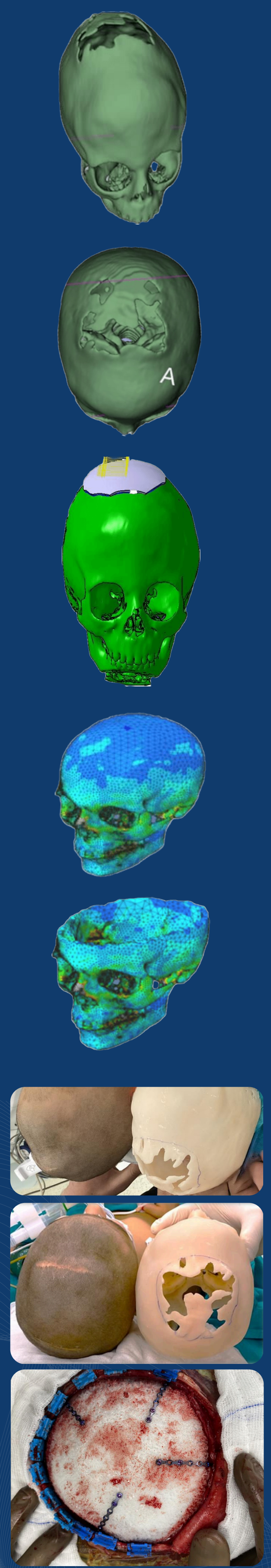
By combining the technology it has developed with current technologies, Bloocell enables doctors to treat their patients with the most accurate information and comfort.

### BLOOCELL CUSTOM MADE

Patient Evaluation and Taking Medical Images → CT scan, MRI or X-rays. → 3D Digital Model → Designed for medical image analysis and 3D visualization → Virtual Recons truction → CAD/CAM Programs

**Bone tissue formation was observed after 10 months with custom made Bloocell Hybrit®**

Allows customization of precise shape and geometry. + Provide adequate load-bearing support during bone regeneration = Mimic the mechanical structure of the tissue and to renew the tissue.



## BLOOCELL ® BIOSCAFFOLD

**Exhibits the natural properties of tissues biomimetrically and mechanically.**

**3. Generation Biomaterial**

**It has a synthetic but natural structure that is bioabsorbable.**

Using artificial intelligence technology, we go one step further than evaluating MRI or CT images in 2 dimensions and provide 3D evaluation. We define the boundaries of textures with 3D voxel data instead of 2D pixel data.

In addition, surgery planning is made with the doctor for the models created, and assistive hand tools are produced during the operation.

Evaluation of tissues in terms of their mechanical resistance properties is not fully recognized. Since clinical evaluation in a living individual is practically impossible, the only available information regarding the mechanism of living tissues has been obtained from clinical observations.

The application of computer calculations to clinical practice seems crucial. Such methods, long used in technical sciences, can confirm or refute previous observations.

Bloocell Design Laboratory determines the stress concentration areas caused by external loads that may cause deterioration in tissues using the finite element method. Applied voltages and force applications result in differences in values, quality and extent of stress distribution. As a result, the design parameters are completed and the optimum design output is obtained, which will adapt to real-time factors and expand the patient's comfort zone.

In Bloocell Virtual Laboratory, the final design and the doctor are brought together in the same environment. The doctor evaluates the tissue and the designed material in a real environment. Our aim is to obtain optimum results by enriching the evaluation criteria.
In the final process before surgery, pathology and material are produced in their real geometries. As a result of the final inspection, production begins.

# bloocell

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## ARTIFICIAL TISSUE TECHNOLOGIES

## BLOOCELL® REGENETRAIVE SOLUTION


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