

## About the Project

OsteoFit is an ambitious National Project that will create a composite bone tissue 3D bioprinted graft implant with high morphological analysis for the effective geometric identification of the adjacent in vivo bone tissue, during the regeneration of complex geometry of bone disorders, accelerating healing.

## The Pillars of the Project

- The techniques of three-dimensional (3D) printing of biomaterials for the construction of a 3D printed mold of high morphological analysis.
- The low-resolution 3D bioprinting inside the mold, creating the complex implant.



## Project Coordinator



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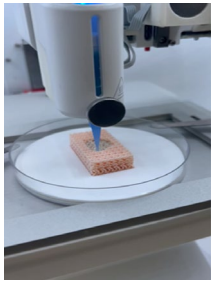
**3D-Bioprinted Bone Tissue  
inside High Resolution 3D-  
Printed Molds for the  
Effective Treatment of Bone  
Tissue Deformations**

**Acronym: OsteoFit  
Code: T2EΔK-03546**

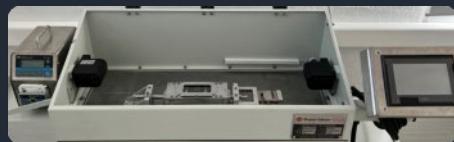


## Overview

**OSTEOFIT** project is the design of the printed matrix of the model for the creation of the composite implant (CI). **UNISHAPE** undertake the creation of three-dimensional model and the design of the features of the 3d printed mold using gyroid meshes, allowing the nutrient flow through its channels and stress transfer features. **KSA** undertake the design and the manufacture of the bioreactor which will be able to stream nutrient media through the CI and apply compressional forces. These procedures will be repeated in multiple circular loads for the CI samples. **BL** optimize the ratio of the bioink of the 3D bio printed bone tissue, cells, micro- and nano-structured particles of calcium phosphate and additional components that will help in the clotting process in bio clay.



*3D Printed Mold with Cell-laden Biomaterials*



*Development of Bioreactor System*

## Work Plan



### Outcomes for BL NANOBIOMED

- Development of Bioinks for Tissue Engineering
- 3D Bioprinting Procedures of Bioinks
- Bioreactor System for Dynamic Cell Culture
- Assessment of the Bioreactor: Incubation of Synthetic Scaffolds in Bioreactor
- Increased Cell Proliferation Rate Compared to Traditional Cell Culture



Isolation of the area of interest

3D Bioprinting of Cell-Laden Synthetic Scaffolds

Incubation of the Scaffolds in Bioreactor under dynamic conditions

## Partners



**BL Nanobiomed P.C.** is a high-tech SME company in the field of nanotechnology, specialized in the production of innovative, high added value-products. Our mission is to develop novel nanomedical **Solutions** to overcome clinical hurdles in the prevention, diagnosis and therapy of diseases.



**Unishape** specializes in the field of design through CAD-CAM systems. The Unishape's excellent know-how and innovative methods, have established her in the difficult and demanding field of 3D Printing technology.



**KSA SUPERALLOYS ENG**, is founded at 2003 in Thessaloniki, Greece, to penetrate new markets and cover the Industry requirements in advanced materials, leading-edge technologies and special mechanical equipment.