

A radical  
innovation in  
biomaterials  
for orthopaedic  
applications

# THE PROJECT

## InnovaBone: at the leading edge of regenerative medicine

Cellular and molecular biologists, immunologists, physicists, bioengineers and orthopaedic surgeons work together to develop a combination of novel bioactive biomaterials to tackle the morbidity associated with serious non-healing bone lesions.

The InnovaBone plan is to develop a prototype, upscale its production and go through all the steps required for future clinical phase trials and commercial exploitation.

*This product will contribute to the EU competitive advantage in the biomaterials global market.*

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[www.innovabone.eu](http://www.innovabone.eu)

ensuring healthy  
**bone regeneration**  
developing bioinspired smart  
**bioactive biomaterials**

# THE PROBLEM

## Repair of large non-healing bone lesions: an unmet medical need

Millions of people worldwide are dealing with traumatic, osteoporotic and osteolytic metastatic bone fractures and lesions that do not undergo self-repair.

Many of the current approaches that require bone substitutes are associated with complications such as immune responses, chronic inflammation and rejection. All these events lead to increased costs and recovery time.

*New biomaterial approaches must be sought and further R&D is essential to overcome the limitations of current implant materials.*



# OUR SOLUTION

## A dual component product: 3D scaffold & bioactive gel

We combine bioinspired materials mimicking the natural physiological processes underlying bone repair. This pioneering strategy aims to accelerate bone healing and reduce adverse side effects with the currently employed biomaterials.

### The Scaffold

Designed to fit within bone lesions, our three-dimensional scaffolds are made using biodegradable and biocompatible photopolymers. Upon implantation, they provide the necessary support for the bioactive gel and will be replaced by newly formed bone during bone regeneration.

### The Gel

Our gel consists in genetically-engineered elastin-like polymers. Once the scaffold is in place, the liquid polymers are injected. The gel solidifies at body temperature and contains growth factors and hydroxyapatite nanoparticles required for new bone formation.

### New Bone Formation

The scaffold and gel combination allows cells from the surrounding bone tissue to migrate into the scaffold and initiate bone repair by triggering new bone formation.

