Giotto

Active aGeIng and Osteoporosis:
The next challenge for smarT nanobiOmaterials and 3D technologies

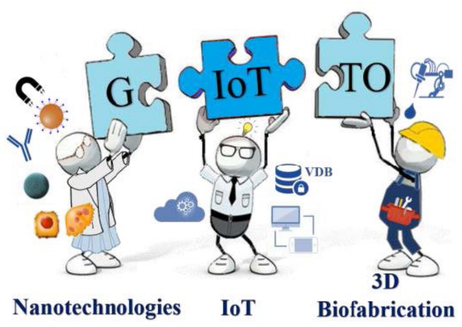
www.giottoproject.eu

THE PROJECT

Osteoporosis ("porous bone") is a very common bone disease, it is more frequent after menopause and with aging but it can occur also at younger age. It occurs when the body loses too much bone, as a result bones become weak and brittle - so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture.

Osteoporotic bone breaks are most likely to occur in the hip, spine or wrist, but other bones can break. Breaking a bone is a serious complication especially with ageing, causing permanent pain and, when osteoporosis affects vertebrae, leading to a stooped or hunched posture.

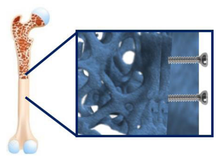
GIOTTO faces this bone disease through a dedicated, precise and personalised approach based on the most recent technological developments. Scientist, medical doctors and medical device producers work together to realize new solutions based on cutting edge technologies to develop **multiple devices for the different types of osteoporotic fractures** which will stimulate bone regeneration while reducing bone loss.



THE CONCEPT

The concept behind GIOTTO is to develop a platform of technologies and materials for the treatment of different types of osteoporotic fractures:

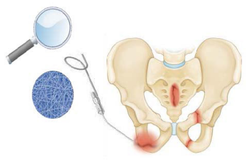
1.



LONG BONE FRACTURES

3D graded scaffold, which can be fixed with screws

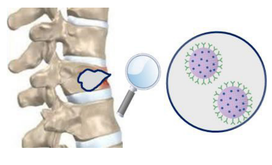
2.



PELVIC FRACTURES

Fibrous scaffold to deal with small pelvic fractures

3.



VERTEBRAL FRACTURES

Radiopaque, bioresorbable, injectable cement to stabilise vertebral fractures

THE TECHNOLOGIES

for patients health and wellbeing

GIOTTO integrates different technologies and brings them closer to a personalized medicine approach:

- 3D-printing and the most updated technologies for bone scaffold manufacturing will be put in place together with nano-functionalisation for the smart release of active molecules and ions.
- Functionalised magnetic nanoparticles to allow controlled mechano-transduction.
- An Internet of Things platform will be developed to gather and collate measurable data inputs about device effectiveness and to provide decision support software as a service to improve the design, manufacture and clinical function of the proposed devices, ultimately managing the overall value chain.
- Safety and sustainability of the final solutions will guide the overall development since the beginning, though testing and the involvement of regulators.

PARTNERS

Politecnico di Torino · Università di Pisa · Maastricht University · Universidad Complutense Madrid · FORTH · Newcastle University · DCU · beWarrant · CELLINK · BIOMECH INNOVATIONS · FLUIDINOVA · NOVAICOS · TECNAN · socializing things

DETAILS

PROJECT TITLE: Active aGeIng and Osteoporosis:
The next challenge for smarT nanobiOmaterials and 3D technologies
ACRONYM: GIOTTO
STARTING DATE: 01 January 2019
ENDING DATE: 28 February 2023
CALL IDENTIFIER: H2020-NMBP-TR-IND-2018
TOPIC: NMBP-22-2018 | Osteoarticular tissues regeneration (RIA)
PROJECT NUMBER: 814410

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814410