Active ageing and osteoporosis: the challenge of the GIOTTO project

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Osteoporosis is a systemic, degenerative disorder, predominantly affecting postmenopausal women (1 out of 3) but also men at an advanced age (1 out of 5) that increases the fracture risk. A number of anti-osteoporotic drugs are available and decrease the fracture risk between 50 and 70% but they also have important side effects and they do not promote fracture healing.
GIOTTO aims to develop a platform of technologies and materials to treat different types of osteoporotic fractures and to support the prevention of new fractures.
In particular, we will design and validate three different solutions:

1) A 3D graded scaffold allowing fixations with screws to treat periprosthetic fractures
2) A collagen based fibrous scaffold produced via electrospinning to deal with small, not confined pelvis fractures
3) A radiopaque, bioresorbable, injectable cement to stabilise vertebral fractures

The three devices will share smart nanobiomaterials able to release chemical and biological cues to stimulate bone regeneration while reducing bone loss.
For further information please visit: http://www.giottoproject.eu/

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Prof. Chiara Vitale-Brovarone, Full Professor in Materials Science and Technology, Politecnico di Torino where she leads the IRIS group (Improving Regeneration by Intelligent Scaffolds). Scopus: 160 papers including research articles and book chapters, H-index 37, ~ 4000 citations.
She has coordinated the EU projects (FP6 – BIORESS, FP7 - MATCH and H2020 - MOZART) and she has been Team leader for the FP7 project RESTORATION. At present, she is coordinating the H2020 project GIOTTO that aims to develop innovative devices to treat osteoporotic fractures and she is the PI of the ERC consolidator grant BOOST.
Her research interests are mainly related to the development of innovative biomaterials ranging from the macro to the nanoscale (3D-scaffolds, micro and nanoparticles, injectable cement and smart surfaces with osteoproductive, antibacterial and biomolecule release properties).
She is developing novel approaches to target bone and wound healing and osteoporotic fractures as well as the fabrication of smart bone scaffolds through rapid prototyping approaches including bioextrusion, ink-jet printing and electrospinning.