Portal explores the Horizon 2020-funded NEXT-3D project with co-ordinator **Dr Artemis Stamboulis.** The MSCA brings together European and Australian researchers to realise breakthroughs in 3D multifunctional materials for biomedical applications

3D connection

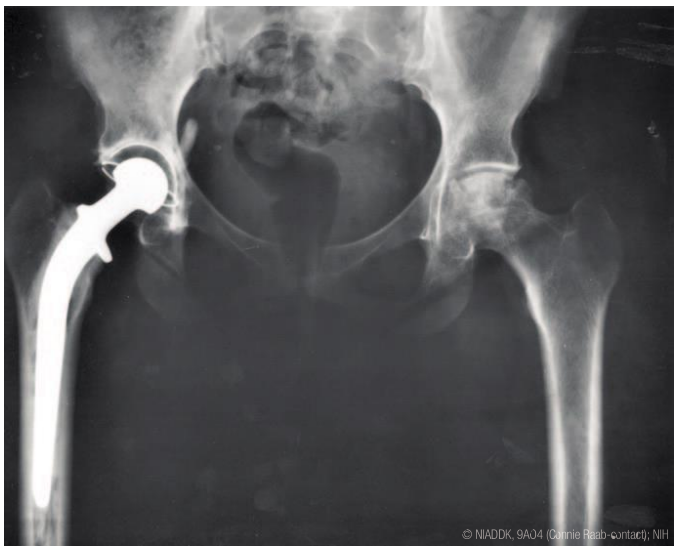
Realising the global potential of the EU's research and innovation framework programme whilst benefitting patients is encapsulated in the Horizon 2020-backed 'Next generation of 3D multifunctional materials and coatings for biomedical applications', or NEXT-3D, project. In September 2014, it was announced that the UK's University of Birmingham, along with the Institut National Polytechnique de Toulouse, or National Polytechnic Institute of Toulouse (IMPT), and the Association des Amis de la Medecine Sociale in France had been successful in their funding application.

The project is a Marie Skłodowska-Curie Action (MSCA) funded under the Research and Innovation Staff Exchange scheme. The project has financing worth €193,500 between 2015 and 2017, and a unique attribute of the venture is its links with Australia, where the project is partnering with both universities and a private firm.

As a third country, partners from Australia involved in a Horizon 2020 project must bring their own money to table. The University of Technology, Sydney, the University of New South Wales, and the company BresMedical have all been successful in securing funding for the project.

To find out more about the NEXT-3D project, Portal spoke to its co-ordinator, Dr Artemis Stamboulis of the University of Birmingham, who detailed the main objectives, provided a further insight into the Australian connection, and outlined the benefits of using funding from the MSCAs.

Dr Artemis Stamboulis



X-ray of a hip replacement: the project hopes to 3D print commercially orthopaedic implants

What are the core aims of the project?

Whilst writing this project proposal, we set the goal of making a commercial product which can be 3D printed and multifunctional. We began by looking at the individual difficulties that such a development would have and brought this into the project. In particular, we are looking at tackling problems with ceramics, especially regarding hydroxyapatite, and the problems associated with 3D printing, notably why 3D printing cannot currently be completed and why it is difficult. We want to make it possible to successfully 3D print ceramics like hydroxyapatite, which has multifunctional behaviour properties.

Another goal is to 3D print metallic surfaces that we are able to functionalise and have the ability to add antimicrobial properties to, as well as other behaviour attributes, for example drug release, analgesic and anti-inflammatory properties.

Which partners are involved in the project?

The project is based on a secondment to industrial partners, helping to ensure knowledge transfer from industry to academia. We are going to assess the difficulties industry faces in developing this type of material, and at the start of the project we will aim to identify the problems with the processing of these materials and the difficulties in developing the final product.

We have six partners in total; three of them are beneficiaries, whilst the others are associate members and all come from Australia. This latter group applied, and received, funding from the Australian Academy of Science. Receiving match funding is easier if we are successful at securing European funding; most of the time match funding is awarded.