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FAST FIELD CYCLING MAGNETIC RESONANCE TECHNOLOGY DEVELOPED BY STELAR SRL TO BE KEY PART OF MULTI-MILLION EU-FUNDED DEVELOPMENT OF NEW GENERATION OF MRI SCANNERS

Stelar Srl is part of a consortium of nine European partners, led by the University of Aberdeen, who have received 6.6 million Euro of funding from the European Union Horizon 2020 research grant scheme for the development of next-generation MRI scanners designed to identify key diseases earlier and in more detail.



IDentiFY project group

The new scanners will be based on the Fast Field Cycling(FFC)-MRI method, thought to be the first of its type in the world for human studies, and will provide much more detailed information about diseases including osteoarthritis, cancer and dementia.

Current standard MRI scanners work at just one fixed magnetic field, however FFC-MRI scanners will allow patients to undergo an MRI scan with thousands of possible variations in the magnetic field, giving considerably more information about tissues and organs in the body.



https://www.youtube.com/watch?v=X4_FgZDyq0Q

Stelar Srl, based in Mede, Italy, has unique and world-leading expertise in the production of instrumentation for Fast Field Cycling magnetic resonance technologies, and will be a key industrial partner in the development of these new FFC-MRI scanners.

Quote from Gianni Ferrante: "I am very proud that Stelar is a key partner in this EU project of high importance and value to future medical diagnostics. Stelar's involvement in this project will aim to develop an improved version of Fast Field Cycling technology for clinical MRI. FFC-



MRI involves measuring the dependency of the T_1 relaxation time on the magnetic field strength which allows us to obtain a fingerprint which will vary for different disease states. This novel FFC-MRI technology will lead to the advent of a new generation of MRI scanners capable of covering continuously a wide range of magnetic field strengths which will allow, in particular, the acquisition of magnetic resonance images at very low magnetic fields where there is a wealth of untapped medical diagnostic information. I am indeed confident we will succeed in bringing this new FFC-MRI technology to the field of *in vivo* medical imaging technologies.

The innovative FFC technology to be developed for the new generation FFC-MRI scanner during the course of this project will also mark a milestone in the development of FFC technology for the unique magnetic resonance relaxometry instrumentation manufactured and commercialized by Stelar. FFC magnetic resonance relaxometers are used for the analysis of a wide range of materials, such as MRI contrast agents for medical diagnostics, polymers for the plastics and car tyre industries, rock cores for the oil and gas industry, electrolytes for developing batteries, proteins for the pharmaceutical and biotech industries and foodstuffs for defining shelf-life and fraud in the food industry, to name a few."

Quote from project coordinator, Prof. David Lurie, University of Aberdeen: "There is a whole range of diseases where FFC-MRI could benefit diagnosis and monitor the success of treatment – early tests show it can measure changes in cartilage in osteoarthritis and our research has also shown that there are changes visible in cancer. We believe there may be changes in many other conditions too.

The signals measured by FFC-MRI are a function of what's happening on a molecular level in tissues which is where disease begins but we're not absolutely certain what is happening, and what's causing these changes – that is what this new project will aim to explore, as well as developing techniques to improve the scanners and to provide better quality images of the body."

The 4-year project "Improving Diagnosis by Fast Field-Cycling MRI" (code named "IDentiFY") kicked off in January 2016 and involves seven academic and two industrial partners from six EU countries.

About Stelar Srl

Stelar Srl is the world leader in instrumentation for Fast Field Cycling NMR Relaxometry. The company holds proprietary know-how and has extensive experience in NMR instrumentation. Stelar Srl is a privately owned. www.stelar.it

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(Pictures courtesy of University of Aberdeen, UK)