

Nano-enabled nasal spray for osteoporosis

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The University of Nottingham spin-out company, Critical Pharmaceuticals, has announced a £545,000 collaboration with the University to develop a nano-enabled intranasal formulation of teriparatide for the treatment of osteoporosis.

Osteoporosis affects an estimated 75 million people in Europe, US and Japan with more than 180,000 patients suffer fragility fractures in the UK alone each year, at a cost of around £2 billion to the NHS.

Teriparatide, an excellent recent addition to the range of drugs used for the treatment of [osteoporosis](#), but it currently needs to be injected every day. The consortium will exploit a recent discovery in nanotechnology to develop a nasal spray formulation of teriparatide that is easy to administer by patients and provides optimal drug plasma levels to enhance efficacy.

The Technology Strategy Board and the Engineering and Physical Sciences Research Council (EPSRC) are supporting this project with grant funding as part of their investment in nanoscale technology-enabled solutions in healthcare.

Critical Pharmaceuticals CriticalSorb nanotechnology is a best in class absorption promoter that enables the nasal delivery of biological and challenging small molecule drugs. Biological drugs represent a \$100 billion market, and yet nearly all need to be administered by frequent injection. CriticalSorb has the potential to transform the delivery of biological drugs by enabling non-invasive delivery that would be strongly

preferred by patients. Critical Pharmaceuticals lead product is a nasal formulation of human growth hormone (CP024) that uses CriticalSorb and is currently in phase 1 clinical development.

Critical Pharmaceuticals is an emerging biotechnology company. CEO, Dr Gareth King, said: “We are excited about working with internationally-recognised clinicians and scientists at The University of Nottingham and Nottingham University Hospitals NHS Trust to rapidly develop this highly innovative formulation of teriparatide and look forward to the day we can offer it as an attractive alternative to daily injection for the many older people living with osteoporosis”.

The University of Nottingham has world-leading capabilities in clinical and basic research in osteoporosis, geriatric care, bone pathophysiology and medical imaging. The use of University expertise for imaging drug deposition and clearance will greatly enhance the development of this formulation. This project will draw on interdisciplinary collaborative research from international experts Dr Richard Pearson (Division of Orthopaedic & Accident Surgery), Professor Alan Perkins (Division of Radiological and Imaging Sciences) and Professor Tahir Masud (Geriatric Medicine).)

Dr Richard Pearson, Senior Research Fellow in The University of Nottingham’s Faculty of Medicine and Health Sciences, said “I’m delighted to collaborate on this project that will enable us to further develop the world-leading research and development capability at The University of Nottingham for the evaluation of drugs for osteoporosis and to work closely with Critical Pharmaceuticals scientists on the development of an exciting new therapy for this debilitating disease”., Senior Research Fellow in The University of Nottingham’s Faculty of Medicine and Health Sciences, said “I’m delighted to collaborate on this project that will enable us to further develop the world-leading research and development capability at The University of Nottingham for the

evaluation of drugs for osteoporosis and to work closely with Critical Pharmaceuticals scientists on the development of an exciting new therapy for this disease”.

Provided by University of Nottingham

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