Pioneering medical nanotechnology offers new cancer breakthrough hope

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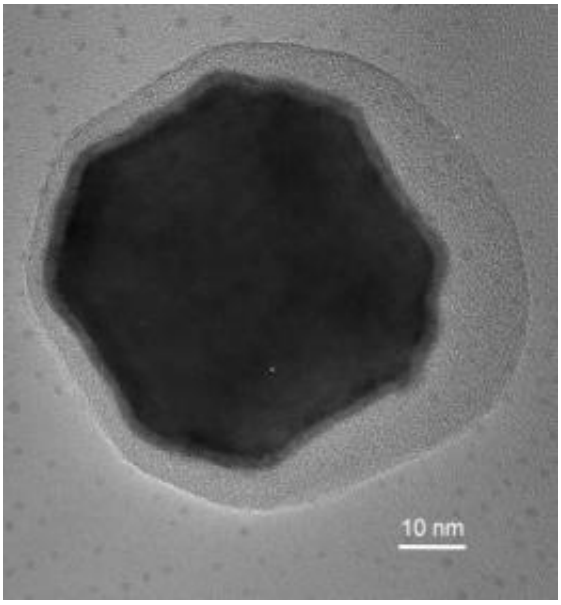

This is a transmission electron micrograph of the magnetic nanoparticles that will be used in this study. Credit: Credit: Professor Chris Binns, Department of Physics and Astronomy, University of Leicester

A multi-disciplinary team of scientists from the University of Leicester could be potentially paving the way for the development of a powerful new strategy for both the early diagnosis and treatment of prostate cancer.

The research is to use cutting edge nanotechnology to identify a pioneering treatment which could also be applied to other aggressive

cancers.

The University of Leicester researchers say that microscopic (5-100 nm) magnetic nanoparticles could be applied in the sensitive diagnosis and effective treatment of prostate cancer. This follows breakthrough nanotechnology research at the University.

Dr Wu Su, of the Department of Chemistry, has been awarded a grant worth £321 K. This is one of only ten Postdoctoral Research Fellowships in the Life Sciences Interface area given this year by the Engineering and Physical Sciences Research Council (EPSRC). This is the first EPSRC postdoctoral research fellowship awarded to the University of Leicester.

The highly prestigious award will allow a multi-disciplinary research team to design high-performance magnetic nanoparticles. The team consists of researchers from the University of Leicester departments of Chemistry, Physics, Cancer Studies and Molecular Medicine and Cardiovascular Sciences.

High-performance magnetic nanoparticles act as probes that show up (using Magnetic Resonance Imaging) and kill (by hyperthermia) tumour cells at a much earlier stage than conventional methods.

The pioneering technology, developed at the University of Leicester, is focused on the development of a new type of magnetic nanoparticle in which the magnetic performance is increase by a factor of ten. Targeting these magnetic nanoparticles to unique cell surface receptors present on the prostate tumour cell surface will enable efficient and specific delivery to prostate cancer cells. The approach is general and it is envisaged that these systems could be applied to other types of aggressive cancers [liver, breast, colon] in which early diagnosis and treatment is essential for recovery.

Dr Su said this technology requires a multidisciplinary approach: "Prostate cancer cure rates are predicated on early diagnosis and treatment. The technology that we are developing offers the potential of both the identification and treatment of prostate cancer in a highly selective manner."

Successful implementation of this technology would provide significant welfare benefits for patients [reducing the need for surgical removal of the prostate] and significant cost benefits for the UK health-care system.

Source: University of Leicester (news : web)