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# Taking tissue regeneration beyond state-of-the-art

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Researchers in the United Kingdom and Malaysia are developing a new class of injectable material that stimulates stem cells to regenerate damaged tissue and form new blood vessels, heart and bone tissue.

Their aim is to produce radical new treatments that will reduce the need for invasive surgery, optimise recovery and reduce the risk of

undesirable scar tissue.

The research, which brings together expertise at the University of Nottingham and its Malaysia Campus (UNMC), is part of the "Rational Bioactive Materials Design for Tissue Generation" or "Biodesign" project – an €11m EU-funded initiative involving 21 research teams from across Europe.

"This research heralds a step-change in approaches to tissue regeneration ," says Professor Kevin Shakesheff, Head of the School of Pharmacy at the University of Nottingham's UK campus. "Current biomaterials are poorly suited to the needs of tissue engineering and regenerative medicine. Our aim is to develop new materials and medicines that will stimulate tissue regeneration rather than wait for the body to start the process itself."

UNMC is building on its expertise in nanotechnology for drug delivery. "Here in Malaysia we are looking at synthesising microparticles that can be injected directly into a patient at the site of injury to promote tissue re-growth," says Professor Andrew Morris, an expert in transdermal drug delivery and Head of the School of Pharmacy (UNMC). "These microparticles would act as a scaffold to encourage regrowth in bone tissue, skeletal muscle and potentially even cardiac muscle."

This research is going to have a significant impact on patients," says Dr. Nashiru Billa who is the Associate Dean for Research in the Faculty of Science. "In future, you could include anti-cancer drugs in the delivery system that would not only lead to the growth of the tissue but would also help kill cancer cells within the bone tissue."

Provided by University of Nottingham Malaysia Campus

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