Medical Xpress

3-D-printed bioabsorbable scaffold for ACL reconstruction with bone regeneration

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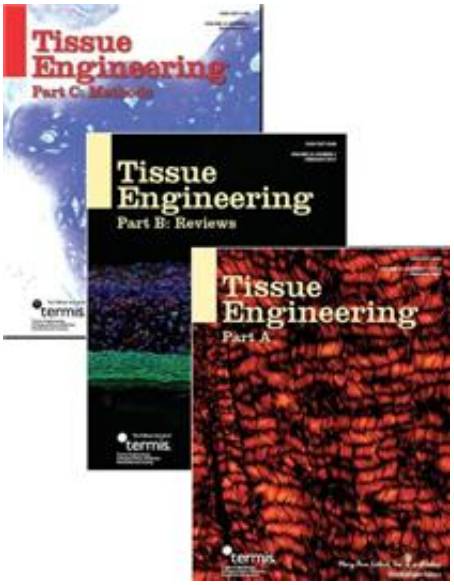

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Researchers have designed a 3D-printed porous scaffold for use in reconstructing ruptured anterior cruciate ligaments (ACL) in the knee and engineered it to deliver a human bone-promoting protein over an extended period of time to improve bone regeneration. A study describing the composition of the scaffold and comparing different delivery methods for recombinant human bone morphogenetic protein 2 (rhBMP-2) is published in *Tissue Engineering*, *Part A*.

Joshua Alan Parry, MD, Sanjeev Kakar, MD, and coauthors from Mayo

Clinic, Rochester, MN, demonstrated the strength of the scaffold in a rabbit ACL reconstruction model. In the article entitled "Three-Dimension-Printed Porous Poly(Propylene Fumarate) Scaffolds with Delayed rhBMP-2 Release for Anterior Cruciate Ligament Graft Fixation," the researchers compared the use of four approaches, including microspheres, to reduce the initial burst release of rhBMP-2 from the scaffold and extend its release over time.

"This work is a good example of the fusion of technologies—controlled release drug delivery and 3D printing," says *Tissue Engineering* Co-Editor-in-Chief Peter C. Johnson, MD, Principal, MedSurgPI, LLC and President and CEO, Scintellix, LLC, Raleigh, NC.

More information: Joshua Alan Parry et al, Three-Dimension-Printed Porous Poly(Propylene Fumarate) Scaffolds with Delayed rhBMP-2 Release for Anterior Cruciate Ligament Graft Fixation, *Tissue Engineering Part A* (2017). DOI: 10.1089/ten.tea.2016.0343

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