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Storage Time for Cartilage Transplant Tissue Doubled by MU Researchers

New method will increase likelihood of success in cartilage grafting procedures

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COLUMBIA, Mo. — For years, doctors have been able to treat defects in joint cartilage by grafting cartilage donated from cadavers into patients' bad joints. Using current methods, donated cartilage can be stored for 28 days before the tissue becomes too degraded to transplant into a patient. Now, researchers from the University of Missouri have found a way to store donated cartilage more than twice as long.

“Currently, nearly 80 percent of all donated tissue has to be discarded because it deteriorates before a transplant bank can find a match with a patient who needs a transplant,” James Cook, a researcher from the [MU College of Veterinary Medicine](#) and the William C. and Kathryn E. Allen Distinguished Professor in Orthopaedic Surgery, said. “By more than doubling the time we can store tissue, the odds of matching the tissue with a recipient are greatly increased.”

In a study due to be published in the *Journal of Knee Surgery*, Cook and Aaron Stoker from [MU's Comparative Orthopaedic Laboratory](#), Clark Hung and Eric Lima from Columbia University, and James Stannard, the J. Vernon Luck Sr. Distinguished Professor in Orthopaedic Surgery in the [MU School of Medicine](#), tested tissue using their patented system, which includes storing the tissue at room temperature in a specially designed container and storage solution. The researchers found that their system preserved transplant-quality tissue for as long as 63 days. The collaborative team of researchers also developed a way to monitor the quality of the stored tissue simply by testing a few drops of their patented storage solution.

“Not only have we been able to increase maximum tissue storage time from 28 to 63 days, but tissue stored for 63 days using our new method is of much higher quality than tissue on its 28th day of storage using the current

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James Cook is the William C. and Kathryn E. Allen Distinguished Professor in Orthopaedic Surgery in the MU College of Veterinary Medicine.

 **Photo**

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method,” Cook said. “This is important because the quality of the tissue at the time of a transplant procedure markedly affects long-term success for the patient.”

The new storage system can be used on many different types of joint cartilage, including knee, hip, shoulder, elbow, and ankle tissue. Doctors can use this tissue to treat a number of different defects including traumatic injuries, sports-related injuries, developmental defects and some types of arthritis-related cartilage loss. These tissue transplants can last for 15 years or more before needing to be replaced with traditional metal and plastic joint replacements. Cartilage grafting has been an FDA approved practice for years, so the new MU storage system is currently under licensing negotiation for clinical application. Cook is optimistic that the first grafts stored using the new system will be available to help patients at the Missouri Orthopaedic Institute within a year.

This study is a result of collaboration through Mizzou Advantage. The Mizzou Advantage was created to increase MU’s visibility, impact and stature in higher education, locally, statewide, nationally and around the world. Mizzou Advantage is a program that focuses on four areas of strength: food for the future, media of the future, one health/one medicine, and sustainable energy. The goals of Mizzou Advantage are to strengthen existing faculty networks, create new networks and propel Mizzou’s research, instruction and other activities to the next level.

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