

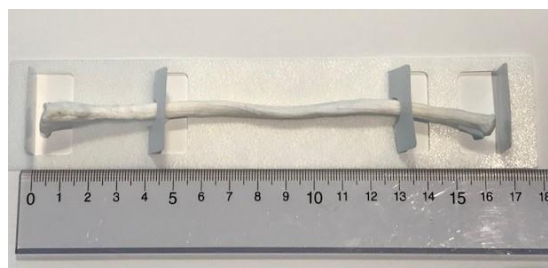
NEWS RELEASE**Teijin and CoreTissue BioEngineering Agree
on Alliance to Mass Produce Artificial Ligament**

Tokyo, Japan, August 6, 2020 --- [Teijin Limited](#) and [CoreTissue BioEngineering Inc.](#) (CTBE) jointly announced today their agreement on a capital and business alliance to jointly develop the world's first mass-produced artificial ligament using decellularization technology to remove cellular components that cause rejection and then use the remaining "good" tissue for the artificial ligament. Teijin and CTBE aim to start clinical trials in 2022 for marketing in Japan and the U.S.

The Teijin–CTBE alliance is based on synergies in development fields, business strategies and proprietary technologies. CTBE will develop an artificial ligament derived from decellularized animal tissue for reconstruction surgery of knee anterior cruciate ligament (ACL), which connects the thighbone and shinbone, and seek approval for manufacturing and marketing, while Teijin will develop the technology for mass production with CTBE.



Starting biological tissue for artificial
ligament



Lyophilized artificial ligament
after decellularization

The alliance will enable Teijin, aiming to be a company that supports the society of the future, to pursue its vision of creating innovative healthcare treatments that respond to demographic change and increased health consciousness in global society. CTBE to develop its first commercial artificial ligament from biological tissue, which so far has been a medical difficulty.

Currently, ligament reconstruction surgery for an ACL injury involves grafting a healthy autologous tendon harvested from the patient. This highly invasive procedure can cause pain, result in limited motion and is difficult to repair later if another rupture occurs. Using decellularization technology to develop the world's first mass-produced artificial ACLs would enable ligament reconstruction surgery without having to graft autologous tendons. It also would expand treatment options for patients who rupture a previously treated ACL or have multiple ligament ruptures.

Decellularization removes cellular components that cause a patient's body to reject biological tissue transplanted from another human or animal. The remaining supporting

tissue (extracellular matrix), which retains its three-dimensional structure, is then used as transplantable tissue. It is greatly anticipated that artificial ligaments can be developed with the unique decellularization technology. Using a bovine tendon, antigens that lead to rejection can be eliminated by removing the problem cells while leaving the higher tissue structure intact and mechanical strength. The transplanted artificial ligament, having been made biocompatible through decellularization, is expected to gradually replace the patient's own tissue after surgery and eventually generate a self-made ligament.

ACL injuries, which usually occur during sports, amount to approximately 20,000* cases in Japan and 180,000** cases in the U.S. annually. In most cases, ligament reconstruction surgery is indicated.

* Ministry of Health, Labor and Welfare NDB Open Data (2017.4-2018.3)

** Werner BC, Trends in Pediatric and Adolescent Anterior Cruciate Ligament Injury and Reconstruction, *J Pediatr Orthop*. Volume 36, Number 5, 2016, pp. 447-452(6)

Teijin is contributing to quality of life of diverse patients through solutions for musculoskeletal diseases, including drugs for treating osteoporosis, medical devices such as sonic accelerated fracture healing system, and medical materials such as artificial joints.

CTBE is enhancing the unique decellularization technology that was first developed by Professor Kiyotaka Iwasaki of the Faculty of Science and Engineering of Waseda University. CTBE is also enhancing a sterilization technology to maintain the strength of biological tissue for diverse applications, such as implantable orthopedic devices, regenerative medicine and drug development using its own technology. Commercialization is being funded by Waseda University and grants from the National Research and Development Agency, Japan Science and Technology Agency, Japan Medical Research and Development Agency, and the Ogasawara Science and Technology Foundation.

About the Teijin Group

Teijin (TSE: 3401) is a technology-driven global group offering advanced solutions in the fields of environmental value; safety, security and disaster mitigation; and demographic change and increased health consciousness. Originally established as Japan's first rayon manufacturer in 1918, Teijin has evolved into a unique enterprise encompassing three core business domains: high-performance materials including aramid, carbon fibers and composites, and also resin and plastic processing, films, polyester fibers and products converting; healthcare including pharmaceuticals and home healthcare equipment for bone/joint, respiratory and cardiovascular/metabolic diseases, nursing care and pre-symptomatic healthcare; and IT including B2B solutions for medical, corporate and public systems as well as packaged software and B2C online services for digital entertainment. Deeply committed to its stakeholders, as expressed in the brand statement "Human Chemistry, Human Solutions", Teijin aims to be a company that supports the society of the future. The group comprises more than 170 companies and

employs some 20,000 people across 20 countries worldwide. Teijin posted consolidated sales of JPY 853.7 billion (USD 8.0 billion) and total assets of JPY 1,004.2 billion (USD 9.4 billion) in the fiscal year that ended on March 31, 2020.

About CoreTissue BioEngineering Inc.

CoreTissue BioEngineering Inc. is a start-up company, spun out from Waseda University in 2016. The company is focusing on commercialization of the artificial ligament made from decellularized animal tissue for the reconstruction surgery of the anterior cruciate ligament injuries.

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