




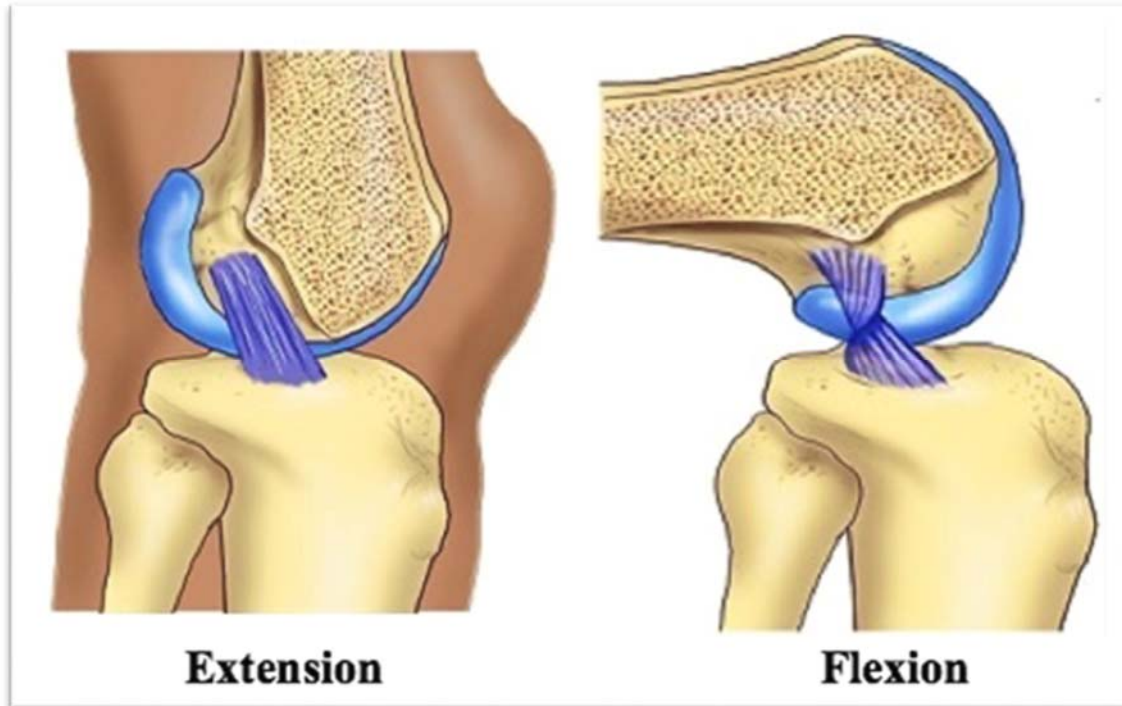
(A)

Tendon graft for ACL reconstruction		
		
Tendon	Bone-Tendon	Bone-Tendon-Bone

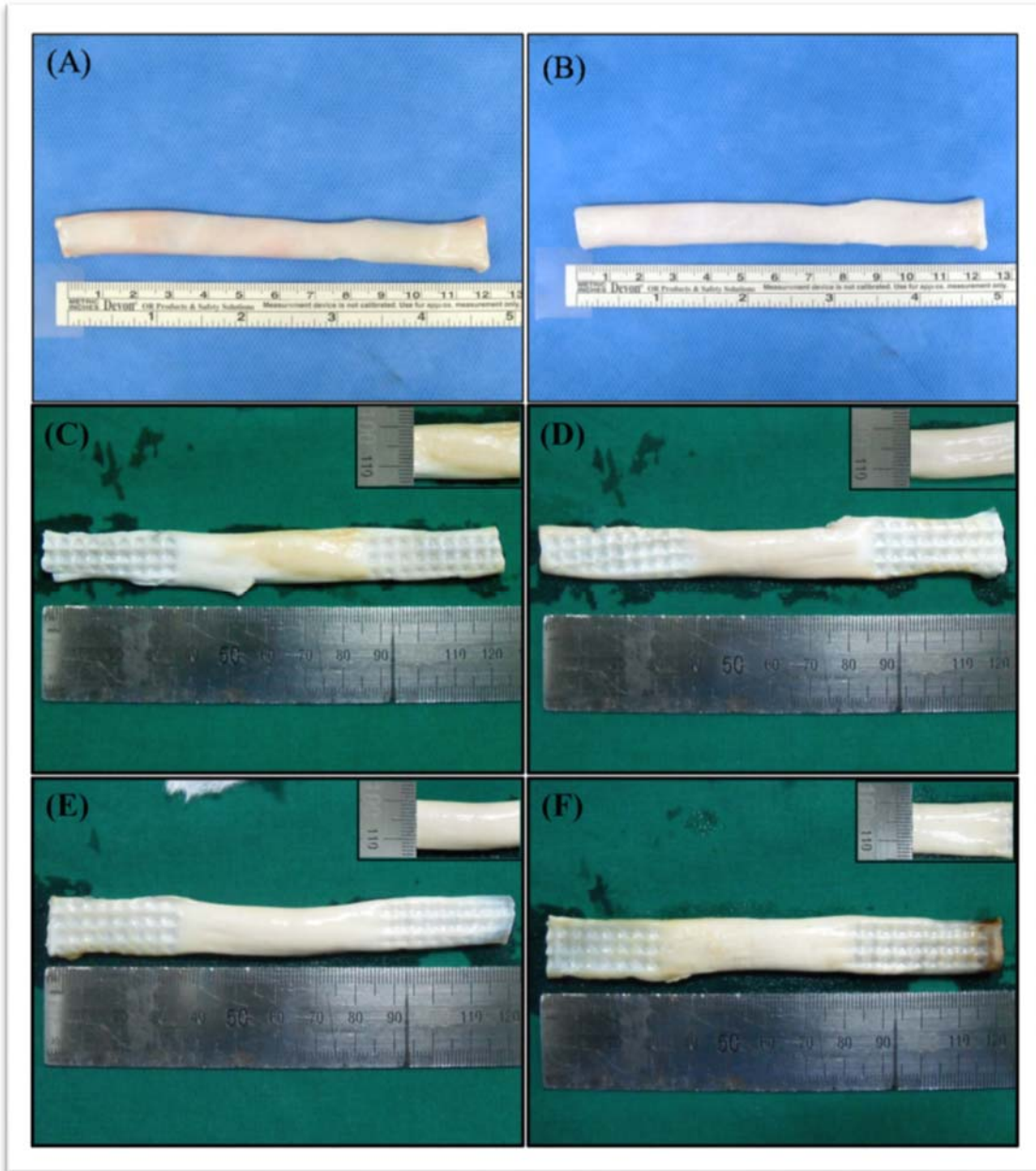
(B)

	Ultimate strength (N)	Stiffness (N/mm)	Cross sectional area (mm ²)
Intact ACL	2160	242	44
Bone-Tendon-Bone (10 mm)	2376	812	35
Quadruple hamstring	4108	776	53
Quadriceps tendon (10 mm)	2352	463	62
Anterior tibialis	3412	344	38
Posterior tibialis	3391	302	48

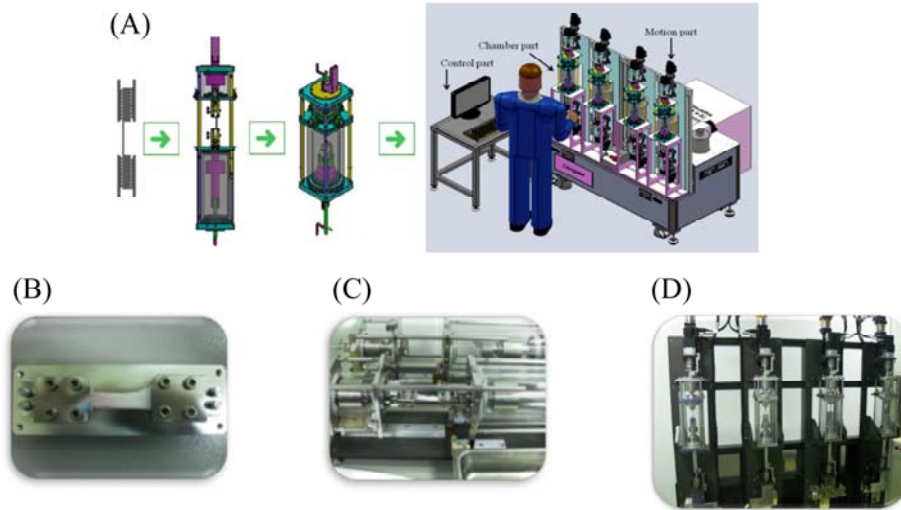
Appendix Figure A1. Tendon graft for ACL reconstruction. (A) Types of tendon graft for ACL reconstruction classified by shape. (B) Biomechanical properties of ACL grafts.



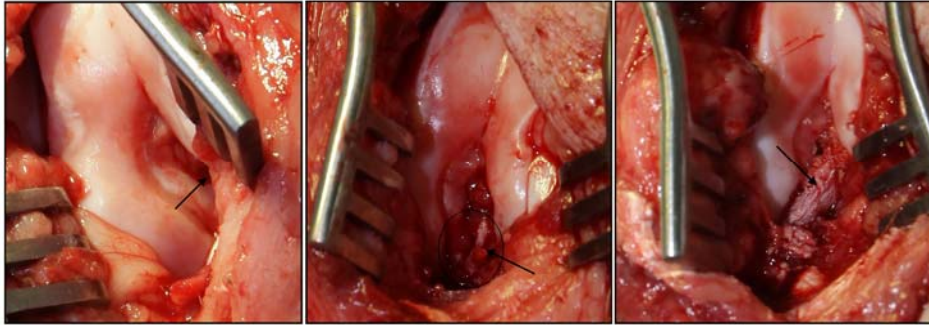
Appendix Figure A2. Normal ACL in extension and flexion. ACL is subjected to maximum tension at full extension and at 90-degree flexion. At 45-degree flexion, ACL slightly relaxed.



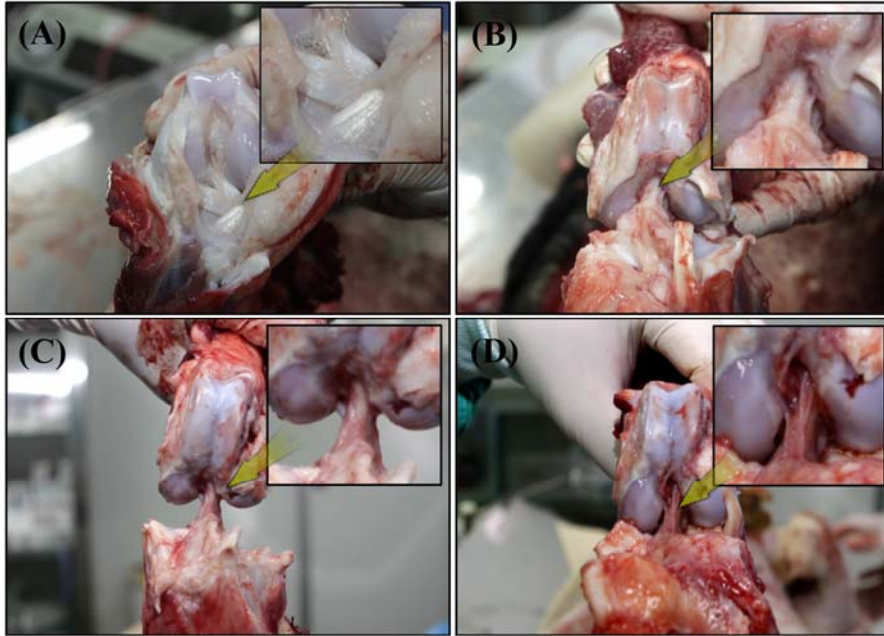
Appendix Figure A3. Porcine tibialis tendon. Length: 12 cm, thickness: 1 cm. (A) before, and (B) after decellularization, (C) control (fresh tendon), (D) D+1, (E) D+3, and (F) D+7 after reactor culture.



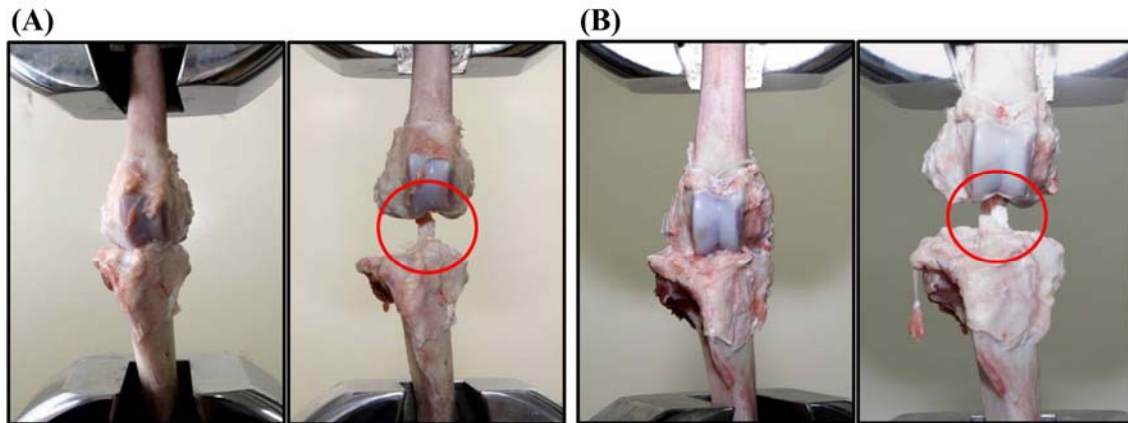
Appendix Figure A4. Tissue bioreactor system. (A) Steps in the assembly of the reactor culture system. (B) The ends of the tendon are held in fixtures that are mounted in individual chambers. (C) Each chamber is perfused with culture media. (D) The chamber containing the tendon is mounted on the frame of the dynamic bioreactor, which applies axial tension and axial rotation.



Appendix Figure A5. ACL reconstruction method using a mini-pig. (A) Intact ACL. (B) After removing ACL. (C) After tendon graft implantation.



Appendix Figure A6. Porcine ACL after 12-week implantation. (A, C) Normal pig; (B, D) ACL reconstructed pig by reactor-cultured tendon.



Appendix Figure A7. Ultimate tensile load test with pig hind legs after ACL reconstruction surgery. (A): Normal pig before tension (left) and after tension (right), (B): The pig after the reactor-cultured tendon's implantation before tension (left) and after tension (right). Note: Tensile test was performed after removing other ligaments.