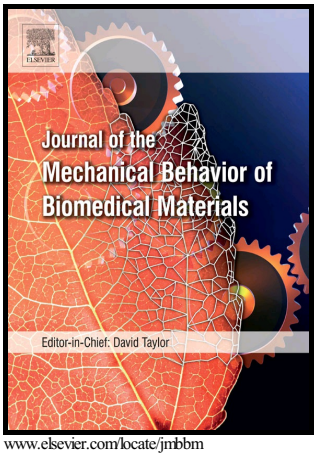
Author's Accepted Manuscript

Comprehensive mechanical characterization of PLA fabric combined with PCL to form a composite structure vascular graft

Chaojing Li, Fujun Wang, Graeham Douglas, Ze Zhang, Robert Guidoin, Lu Wang



www.elsevier.com/locate/jmbbm

PII: S1751-6161(16)30383-6
DOI: http://dx.doi.org/10.1016/j.jmbbm.2016.11.005
Reference: JMBBM2126

To appear in: *Journal of the Mechanical Behavior of Biomedical Materials*

Received date: 11 June 2016
Revised date: 1 November 2016
Accepted date: 3 November 2016

Cite this article as: Chaojing Li, Fujun Wang, Graeham Douglas, Ze Zhang Robert Guidoin and Lu Wang, Comprehensive mechanical characterization o PLA fabric combined with PCL to form a composite structure vascular graft *Journal of the Mechanical Behavior of Biomedical Materials* http://dx.doi.org/10.1016/j.jmbbm.2016.11.005

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, an review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered whic could affect the content, and all legal disclaimers that apply to the journal pertain

ACCEPTED MANUSCRIPT

Comprehensive mechanical characterization of PLA fabric combined with PCL to form a composite structure vascular graft

Chaojing Li[a,c], Fujun Wang[a], Graeham Douglas[b], Ze Zhang[c], Robert Guidoin[c], Lu Wang[a*]

[a]Key Laboratory of Textile Science and Technology of Ministry of Education and College of Textiles, Donghua University, 2999 North Renmin Road, Shanghai 201620, China

[b]Department of Engineering, University of Cambridge, Cambridge CB2 1PZ, UK

[c]Department of Surgery, Laval University and Axe of Regenerative Medicine, Research Center CHU, Quebec, QC Canada

Accepted manuscript

Abstract:

Vascular grafts made by tissue engineering processes are prone to buckling and twisting, which can impede blood flow and lead to collapse of the vessel. These vascular conduits may suffer not only from insufficient tensile strength, but also from vulnerabilities related to compression, torsion, and pulsatile pressurization. Aiming to develop a tissue engineering-inspired blood conduit, composite vascular graft (cVG) prototypes were created by combining a flexible polylactic acid (PLA) knitted fabric with a soft polycaprolactone (PCL) matrix. The graft is to be populated in-situ with cellular migration and proliferation into ~~cells migrating to and proliferating in~~ the device~~, and it was designed to match the morphology and mechanical features of natural blood vessels~~.

Download English Version:

https://daneshyari.com/en/article/5020629

Download Persian Version:

https://daneshyari.com/article/5020629

Daneshyari.com