Technology Opportunity Bulletin

Decellularized Adipose Tissue for Soft Tissue Augmentation

Tech ID: 2008-087

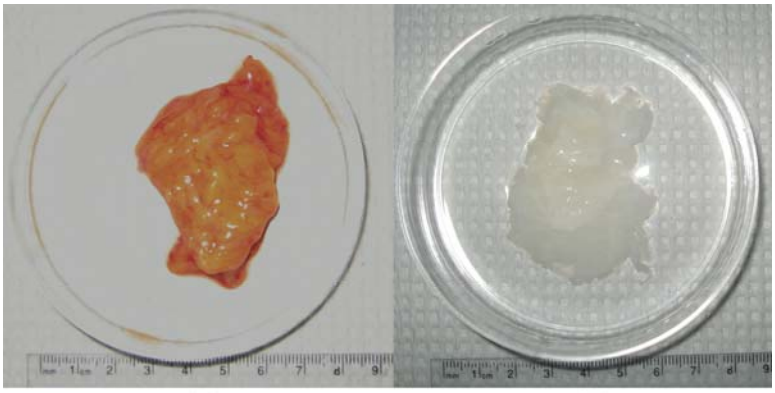
Introduction:

Current clinical strategies for soft tissue augmentation and reconstruction employ a variety of natural and synthetic biomaterials as substitutes for adipose tissue. These include collagen processed from allogenic or xenogenic dermal tissue, hydrogels based on hyaluronic acid or alginate, and alloplastic materials such as silicone, polytetrafluoroethylene (PTFE), etc. However, these substitutes focus on bulking the overlying dermis, rather than permanently restoring the defects with functional adipose tissue. Moreover, each has a number of limitations, including graft resorption, implant migration, risk of disease transmission and immunological response, as well as the development of hypersensitivity.

Given that most cosmetic soft tissue defects are caused by changes in the subcutaneous adipose tissue layer, it would seem reasonable to use matrix derived from adipose tissue as a filler to correct these minor defects. In addition, adipose tissue is a readily available and uniquely expendable autologous or allogenic matrix source. However, this approach has not been pursued, possibly due to the fact that, until recently, a method of producing an intact, adipose tissue-derived extracellular matrix devoid of cells did not exist.

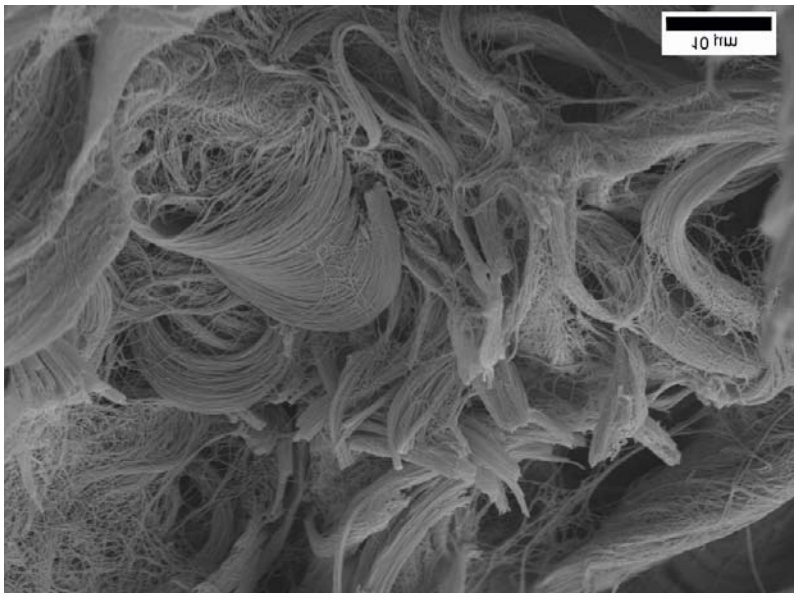
Technology Description:

A researcher at Queen's University has developed a detergent-free and collagenase-free method of processing adipose tissue that yields an intact extracellular matrix with significant architecture and volume, but that is devoid of cells. The decellularization process is straightforward, the processing times are short, and the adipose tissue can be derived from a variety of sources (human or animal), as either an excised block or a lipoaspirate. The processed matrix has long-term stability, closely replicates the native adipose tissue microenvironment, and is a rich source of basement membrane.



Photographs of (a) unprocessed human adipose tissue and (b) decellularized adipose tissue.

PARTEQ Innovations, Queen's University, Kingston, Ontario, Canada K7L 3N6 **p:** 613.533.2342 **f:** 613.533.6853 **w:** www.parteqinnovations.com



SEM analysis of decellularized adipose tissue, confirming the intact matrix architecture and absence of cells following processing.

Applications:
Potential applications include soft tissue filler or bulking agent for cosmetic plastic surgery; large volume reconstruction material for treating congenital birth defects, diabetic ulcers, burns, or in the repair of soft tissue defects caused by trauma or tumor resection; or to treat soft tissue atrophy.

Status of Commercialization:
PARTEQ Innovations, the technology transfer office of Queen's University, is seeking companies interested in developing/licensing the technology. To discuss further, or to request additional information, please contact:

Jason Hendry, MASc
Manager, Commercial Development
Phone: (613) 533-2342
Cell: (613) 483-2066
Email: jhendry@parteqinnovations.com