CelluloMedix

PCI VENTURES

Company Overview

CelluloMedix aims to develop injectable, plant-based materials for long-term soft tissue filler applications. The primary product is based on methylcellulose, a derivative of the plant polysaccharide cellulose, which is modified to achieve stable material properties that match native soft-tissue, while permitting reversibility.

Problem

There are several indications for the use of permanent fillers for volumetric augmentation, including the correction of tissue atrophy and deficits due to trauma, tumor resection, infectious processes (i.e., HIV), and craniofacial anomalies. In 2013, over 500K of these surgical procedures employed semi-permanent or permanent fillers, including autologous fat grafts, poly(lactic acid), calcium hydroxylapatite, and poly(methyl methacrylate), at an annual cost of $436 million. However, the longevity of these materials is limited to <15 months, and they rely on a foreign body response to produce the desired tissue bulking effect, which is difficult to control. In addition, the high viscosity of some fillers restricts their use, and they cannot be easily removed in the event of post-surgical complications, such as migration, hematomas, edema, hypertrophic scarring, nodule formation and resorption. Therefore, there is a need for long-term, biocompatible fillers that may be easily administered and allow for corrective management due to adverse sequelae.

Solution

CelluloMedix is developing a two-component methylcellulose-based filler that forms a covalently crosslinked hydrogel upon injection. Methylcellulose is an FDA-approved, biocompatible, plant-based material used for a number of indications ranging from drug delivery to wound healing. Furthermore, unlike other natural long-term fillers that are prone to breakdown via enzymes present in the body, methylcellulose cannot be degraded naturally due to a lack of the cellulase enzyme in humans. This creates a stable, low viscosity, volumizing material that can maintain shape and functional properties over a long duration. By varying composition and crosslinking density, properties such as viscosity and stiffness can be tuned for various applications and anatomical locations. In the event that removal is desired, controlled degradation can occur with cellulase enzymatic treatment. Long-term stability, immediate tissue bulking effect and selective reversibility all distinguish this product from others on the market.

Team Information

Steve Davis, CEO is a medical device executive with a 20-year career in start-up companies, with expertise in product design, process/manufacturing engineering, team building, finance, sales & marketing, regulatory requirements, and quality assurance.

Dr. Steve Nicoll is an Associate Professor in the Dept. of Biomedical Engineering at CCNY with over 20 years of experience developing biomaterials for soft tissue repair.

Contact:
Michael Dishowitz
Portfolio Manager, PCI Ventures
University of Pennsylvania
dishowit@upenn.edu
215.573.6571