“Engineered Silk Proteins for Regenerative Medicine”

Prof. David Kaplan
Tufts University

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ABSTRACT

Silk is one of the oldest biomaterials, utilized as sutures and in wound healing for centuries, yet undergoing a rebirth into new biomaterial formats and applications over the past few decades. One key to this emergence has been to modify the native protein using new processing methods and chemistries to engineer new material features. Some of these strategies developed to morph silk, as a high molecular weight amphiphilic protein, into new biomaterials with new properties will be discussed. The utility of some of these new material formats in 3D printing, biomaterial scaffolding, tissue engineering and regenerative medicine will also be presented. The needs for tunable, degradable, robust biomaterials for a range of medical goals remains high and silk proteins offer a unique suite of options to help address these needs.

*For further information, please contact YoungHee Chudy at younghlee.chudy@uconn.edu or 860 486 3582.