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Current May 2011

Home Address

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Work Address

University of Pennsylvania
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EDUCATION

Tufts University, Medford, MA

PhD, Biomedical Engineering, May 2010

Thesis: Mechanical Characterization of Silk-Based Biomaterials for Functional Tissue Engineering

Advisors: Dr. David L. Kaplan, Dr. A. Luis Dorfmann

Committee Members: Dr. Fiorenzoomenetto (Tufts), Dr. Joyce Wong (Boston University)

Tufts University, Medford, MA

Bachelor of Science Degree, Cum Laude, 2005

Dual Majors: *Mechanical Engineering and Biomedical Engineering*

EMPLOYMENT

McKay Orthopaedic Research Laboratory, University of Pennsylvania

Postdoc Fellow – Mentors: Dr. Robert Mauck, Dr. Dawn Elliott Jan 2010-July 2011

- Developing novel multi-polymer nanofibrous composite scaffolds with control of degradation rates, mechanical properties, and molecular delivery profiles
- Improving design of Intervertebral disc mimics and replacement devices
- Developing novel methods to improve soft/hard tissue interfaces

Biomedical Engineering Dept., Tufts University

Graduate Student Research Assistant 2005-2009

- Designed tissue scaffolding and bioreactors for collaborations through NIH-funded P41 Tissue Engineering Resource Center (TERC)
- Performed mechanical characterization for Graduate Student and Post-Docs
- Mentored undergraduate students and managed core lab facilities related to tissue culture, materials processing, and mechanical analysis

Kendall Healthcare (Now Covidien), subsidiary of Tyco International

Research Co-Op, Dialysis R&D 2004-2005

- Designed and executed functional testing protocols for QC
- Manufactured and evaluated prototypes using compression molding technique

TEACHING EXPERIENCE

Graduate School Teaching Assistant, Tufts University:

ME1: Experimental Methods in Mechanical Engineering, Spring 2006

- Monitored laboratory training for software programming, DAQ operations
- Hosted up to 20 hrs/week office hours for student Q&A

BME94: Sophomore Research Course, Fall 2006, Spring 2007, Fall 2007, Fall 2008

- Designed and assisted in practical experimental methods
- Revised and evaluated final report and presentation content

Undergraduate Mentor, Tufts University:

- Trained 7 undergraduate students in basic and advanced laboratory techniques
- Revised and evaluated research reports, presentations

Undergraduate Mentor, University of Pennsylvania:

- Trained 3 undergraduate students in basic and advanced laboratory techniques

GRADUATE COURSEWORK

Biomedical Engineering: "Biomaterials & Tissue Engineering", "Molecular Biotechnology", "Analytical Tools for Biomedical Engineering", "Tissue Engineering Lab"
Mechanical Engineering: "Biomechanics", "Composite Mechanics", "Finite Element Methods in Engineering", "Nonlinear Finite Element Analysis"

PROFESSIONAL SOCIETIES

Biomedical Engineering Society (BMES)

Fall 2008-Present

REVIEWER

Journals: **Journal of Biomaterials Science, Polymer Edition; Applied Physics A, Materials: Science & Processing; Journal of Tissue Engineering and Regenerative Medicine; Tissue Engineering; Biomacromolecules**

Grants: *Swiss National Science Foundation*

PATENTS

Wang, X., **Name**, Leisk, G.A., and Kaplan, D.L., U.S. Provisional Patent: "Method for Silk Fibroin Gelation Using Sonication," Serial Number 2008/065076, filed 5/29/2008.

BOOK CHAPTERS

Name and Mauck, R.L. "Synthetic/Biopolymer Nanofibrous Composites as Dynamic Tissue Engineering Scaffolds." *In **Biomedical Applications of Polymeric Nanofibers (Advances in Polymer Science) (V. 2)***. Springer-Verlag, Berlin Heidelberg (2011).

Name, Leisk, G., and Kaplan, D. "Mechanical Determinants of Tissue Development." *In Principles of Regenerative Medicine, Second Edition*. Elsevier Academic Press, Boston, MA. (2011).

Name, Leisk, G., and Kaplan, D. "Mechanical Determinants of Tissue Development." *In Principles of Regenerative Medicine, First Edition*. Elsevier Academic Press, Boston, MA. (2008).

Name, Rosiello, N., Leisk, G.G., Kaplan, D.L., and Dorfmann, L.A. "Nonlinear Poroelastic Deformations of Silk Protein Hydrogels." *In Poromechanics IV: Proceedings of the Fourth BIOT Conference on Poromechanics*. DEStech Publications, Inc., Lancaster, PA. (2009).

PEER-REVIEWED JOURNAL PUBLICATIONS

Name, Pampati, R.A., Zhou, D.L., Schenker, M., Esterhai, J.L., Kaplan, D.L., Mauck, R.L. Advanced Silk/PCL nanofibrous scaffolds for delivery of active FGF-2. (In preparation).

Name, Pampati, R.A., Amaniera, F.A., Shah, R.L., Esterhai, J.L., Kaplan, D.L., Mauck, R.L. Water Annealing Modulates the Functional Properties of Silk-Based Electrospun Mats. (Submitted).

Name, Leisk G.L., Cardwell R.D., Fernandes A.P., House M., Ward A., Dorfmann A.L., Kaplan D.L. Bioreactor System Using Noninvasive Imaging and Mechanical Stretch for Biomaterial Screening. *Annals of Biomedical Engineering*. 39 (2011), 1390-1402.

Rockwood D.N., Gil E.S., Park S.H., **Name**, Grayson W., Bhumiratana S., Rajkhowa R., Wang X., Kim S.J., Vunjak-Novakovic G., Kaplan D.L. Ingrowth of human mesenchymal stem cells into porous silk particle reinforced silk composite scaffolds: An in vitro study. *Acta Biomaterialia*, 7 (2011), 144-51.

Name, Thurber A., Leisk G.G., Kaplan D.L., Dorfmann A.L.: A model for the stretch-mediated enzymatic degradation of silk fibers. *Journal of the Mechanical Behavior of Biomedical Materials*, 3 (2010), 538-473.

Serban M.A., **Name**, Laha M.M., Kaplan D.L. Modular Elastic Patches: Mechanical and Biological Effects. *Biomacromolecules*, 11 (2010), 2230-2237.

Lovett M., Eng G., **Name**, Cannizzaro C., Vunjak-Novakovic G., Kaplan D.L. Tubular silk scaffolds for small diameter vascular grafts. *Organogenesis*, 6 , pp. 217-224, 2011.

Rajkhowa R., Gil E.S., **Name**, Numata K., Wang L., Wang X., Kaplan D.L.: Reinforcing silk scaffolds with silk particles. *Macromolecular Bioscience*, 10 (2010), pp. 599-611, 2010.

Lawrence, B.D., Wharram, S., **Name**, Leisk, G.G., Rosenblatt, M.I., Kaplan, D.L. Effect of Hydration on Silk Film Material Properties. *Macromolecular Bioscience*. 10 (4), pp. 393-403, 2010.

Lu, Q., Hu, X., Wang, X., **Name**, Lu, S., Cebe, P., and Kaplan, D.L. Water-insoluble silk films with silk I structure. *Acta. Biomater.* 6 (4), pp. 1380-7, 2010.

Lu, S., Wang, X., Lu, Q., Zhang, X., **Name**, Uppal, N., Omenetto, F., and Kaplan, D.L. Insoluble and flexible silk films containing glycerol. *Biomacromolecules*. 11 (1), pp. 143-50, 2010.

Name, Rosiello, N.A., Leisk, G.G., Kaplan, D.L., and Dorfmann, A.L. The consolidation behavior of silk hydrogels. *J. Mech. Behav. Biomed. Mater.* 3, pp. 278-289, 2010.

Etienne, O., Schneider, A., **Name**, Bellemin-Laponnaz, C., Polidori, C., Leisk, G.G., Kaplan, D.L., Garlick, J.A., and Egles, C. Soft tissue augmentation using silk gels: an *in-vitro* and *in-vivo* study. *J. Periodontol.* 80 (11), pp. 1852-1858, 2009.

Name, Rabotyagova, O., Leisk, G.G., and Kaplan, D.L. Spider silks and their applications. *Trends Biotechnol.* 26, pp. 244-251, 2008.

DesRochers, D.W., Awerman, J.M., **Name**, Wilkinson, J., Van Griethuijsen, L., Aman, J., and Romero, L.M. Exogenous and endogenous corticosterone alters feather quality. *Comp. Biochem. Physiol. A Mol. Integr. Physiol.* 152 (1) pp. 46-52, 2009.

Wang, X., **Name**, Leisk, G.G., and Kaplan, D.L. Sonication-induced gelation of silk fibroin for cell encapsulation. *Biomaterials*. 29, pp.1054-1064, 2008.

Soffer, L., Wang, X., Zhang, X., **Name**, Dorfmann, L., Kaplan, D., and Leisk, G. Silk-based electrospun tubular scaffolds for tissue-engineered vascular grafts. *J. Biomater. Sci. Polym. Ed.* 19, pp. 653-664, 2008.

CONFERENCE PRESENTATIONS

Name, Pampati R.A., Schenker M.L., Zhou D.J., Esterhai J.E., Kaplan D.L., Mauck R.L. Delivery of Active FGF-2 from Mechanically-Stable Biological Nanofibers Accelerates Cell Ingress into Multifiber Composites. Proceedings of ASME 2011 Summer Bioengineering Conference, Farmington, PA, June 22-25, 2011.

Shaffer R. *, **Name**, Dahlgren L., Kaplan D.L., Goldstein A. Application of mechanical stretch to elastomeric, electrospun polyurethane scaffolds for musculoskeletal tissue engineering. Tissue Engineering & Regenerative Medicine International Society-North America Annual Conference and Exposition, Orlando, FL, December 5-8, 2010.

Name, Martin J.T., Nerurkar N.L., Amaniera F.A., Pampati R.A., Elliott D.M., Mauck R.L. Functional enhancement of disc-like angle-ply structures via dynamic culture. 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13 – 16, 2011 (submitted).

Name, Pampati R.A., Amaniera F.A., Shah R.P., Kaplan D.L., Mauck R. L. Versatile Nanofibrous Composites for Soft Tissue Repair via Silk Protein Incorporation. 57th Annual Meeting of the Orthopaedic Research Society, Long Beach, CA, January 13 – 16, 2011..

Shaffer R.* , **Name**., Dahlgren L., Kaplan D.L., Goldstein A. Mechanical loading of mesenchymal stem cells on electrospun scaffolds for ligament tissue engineering. 2010 BMES Annual Fall Meeting, Austin, TX, October 6-9, 2010.

Name, Gil E.S., Kaplan D.L., Mauck R.L. Tunable degradation in protein/synthetic electrospun composites.2010 BMES Annual Fall Meeting, Austin, TX, October 6-9, 2010. (submitted).

Name, Pampati R.A., Amaniera F.A., Shah R.P., Kaplan D.L., Mauck R. L. Dynamic Silk-Based Composite Nanofibrous Scaffolds for Soft Tissue Repair. Musculoskeletal Biology and Bioengineering GRC, Andover, NH, August 1-6, 2010.

Name, Leisk G.G., Thurber A., Kaplan D.L., and Dorfmann A.L. “Mechanically-Induced Remodeling of Degradable Biomaterials.” 16th US National Congress on Theoretical and Applied Mechanics (USNCTAM), University Park, PA, June 27 - July 2, 2010.

Bhumiratana, S.* , Grayson, W.L., Castañeda, A., Gil E.S., Rockwood, D., **Name**, Kaplan, D.L., Vunjak-Novakovic, G. “Enhancement of mechanical properties of silk scaffolds by reinforcement with silk micro particles” presented at the 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 6-9, 2010.

Name, Rosiello, N., Leisk, G.G., Kaplan, D.L., and Dorfmann, L.A. “Nonlinear Poroelastic Deformations of Silk Protein Hydrogels” in *The Fourth Biot Conference on Poromechanics*, Columbia University, New York, NY, June 8-10, 2009.

A.L. Oliveira*, Sun, L., Kim, H.J., Hu, X., Rice, W., **Name**, Reis, R.L., and Kaplan, D.L. “Designing Silk-Based 3D Architectures with Controlled Lamellar Morphology,” presented at the TERMIS EU 2008 Porto Meeting, Alfândega, Portugal, June 22-26, 2008. Abstract available in print: *Tissue Engineering Part A*, 14 (5) pp. 718-719, 2008.

Name, Fernandes, A., Leisk, G.G., Dorfmann, L.A., Jaffe, M., and Kaplan, D.L. “Composite Matrix Designs Related to Mechanical Forces and Tissue Remodeling,” presented at the 8th World Biomaterials Congress, Amsterdam, the Netherlands, May 8-June 1, 2008.

Name, Rosiello, N., Leisk, G.G., Kaplan, D.L., and Dorfmann, L.A. “Silk Hydrogel Mechanics: Nonlinear Response Based on Protein Concentration,” presented at the 2008 BMES Annual Fall Meeting, St. Louis, MO, October 4-5, 2008.

Chang, G.* , **Name**, Vunjak-Novakovic, G., Kaplan, D., and Kandel, R.A. “Mechanical Stimulation Improves Annulus Fibrosus Tissue Formation and Organization on Fibrous Silk Scaffolds,” presented at the 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2-5, 2008.

Kandel, R.* , Seguin, C., **Name**, Vunjak-Novakovic, G., and Kaplan, D.L. “*Tissue Engineering an Intervertebral Disc: Fact or Fiction?*” presented at the 7th World Congress of the International Cartilage Repair Society ICRS 2007, Warsaw, Poland, September 29 - October 2, 2007.

* Presenting author, if other than self