Lauren E. Kokai, PhD
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RESEARCH

Accomplished scientist and bioengineer with project management experience in medical devices and tissue-engineered products. Experienced in designing and implementing testing strategies for pre-Product Design feasibility analysis. Proficient in data tracking and statistical analysis of multivariable and complex systems. Collaborated with marketing and clinical teams to conduct user interviews and expert panel product reviews.

EDUCATION

University of Pittsburgh *Pittsburgh, PA*
Ph.D., Bioengineering Jan 05 – Oct 09
Concentration: Cellular and Organ Engineering
Advisor: Kacey Marra, Ph.D.
Dissertation: "Controlled Delivery Systems for Neuronal Tissue Engineering"

University of Pittsburgh *Pittsburgh, PA*
B.S., Bioengineering Aug 00 - April 04
Concentration: Biotechnology and Artificial Organs

PROFESSIONAL EXPERIENCE

Visiting Research Instructor, Dept. of Plastic Surgery, Univ. of Pittsburgh Nov 12 – *current*

- Project manager for cross-disciplinary collaborations within Adipose Stem Cell Center and the McGowan Institute for Regenerative Medicine. Perform project planning, study design development, milestone tracking, budgeting and resource (staff) management.
- co-PI for both government and private grants.
- Generate Institutional Review Board protocols and patient consent forms.
- Perform laboratory training and manage junior staff.

Consultant, Johnson & Johnson, Cincinnati, OH May 13 – *current*

- Perform product and market research for medical devices within Ethicon, Inc. a J&J Subsidiary, product portfolio.
- Generate white papers and "best practices" paper to direct product managers toward next generation device design to better meet customer needs.

Scientist, Allergan Medical, Santa Barbara, CA Feb 10 – Oct 12

- Worked with management and key opinion leaders to develop novel product concepts from feasibility testing to product development. Performed strategic project planning with marketing, clinical and regulatory teams.
- Lead a team of scientists and biology professionals to achieve high-level corporate milestones ahead of schedule. Consistently received "exceeded expectations" on yearly reviews.
- Generated cell-based and in vivo models for pre-Product Development pharmaceutical and material characterization. Work resulted in 3 Record of Inventions (ROIs), 8 Standard Operating Procedures (SOPs) and 2 patent applications.
- Performed complex multivariable human tissue characterization using visual analysis software to identify target patient demographics for clinical trials.
- Managed external contracts with CROs and academic collaborations.

Graduate Researcher, Dept. of Bioengineering, Univ. of Pittsburgh Jan 05 – Dec 09

- Designed, synthesized and evaluated polymer drug delivery vehicles for tissue engineering applications including regeneration of adipose and nerve tissue for trauma victims. Work resulted in 1 patent application.
- Managed/mentored 7 undergraduate students for project completion and scientific skill development.

Undergraduate Researcher, Div. of Plastic Surgery, Univ. of Pittsburgh Aug 03 – May 04

- Investigated adult and embryonic stem cells for tissue engineering applications.

Undergraduate Researcher, Dept. of Biochemistry, Univ. of Louisville, Louisville KY May 01 – Aug 01

- Identified sarcoplasmic reticulum Ca2+-ATPase 1 (SERCA 1) proteins upregulated in cold-tolerant Rana sylvatica frogs through Western blot analysis.

TEACHING EXPERIENCE

- Co-Instructor, Scientific Ethics and the Responsible Conduct of Research, Univ of Pitt (13)
- Adjunct faculty, Anatomy and Physiology Part 2, Comm. College of Allegheny County (13)
- Teaching Assistant, Bioengineering Methods and Applications, U of Pitt (07 and 08)
- Math Instructor for GED Preparation, Greater Pittsburgh Literacy Council (06 – 08)

PUBLICATIONS

Peer-Reviewed Journal Articles

1. **Kokai, L.E.,** and Rubin, J.P. "Discussion: "The Effect of Pressure and Shear on Autologous Fat Grafting," Accepted by *Plastic and Reconstructive Surgery,* January 2012.
2. Lin, Y.-C.; Ramadan, M.; Van Dyke, M.; **Kokai, L.E.**; Philips, B.J.; Rubin, J.P.; Marra, K.G. "Keratin Gel Filler for Peripheral Nerve Repair in a Rodent Sciatic Nerve Injury Model," Plastic and Reconstructive Surgery, 2012, 129(1):67-78.
3. **Kokai, L.E.**, Bourbeau, D., Weber, D., McAtee, J.L., Marra, K.G. "Sustained Growth Factor Delivery Promotes Axonal Regeneration in Long Gap Peripheral Nerve Repair," Tissue Engineering, Part A, 2011, 17(9-10):1263-75.
4. Ghaznavi, A.M., **Kokai, L.E.**, Lovett, M.L., Kaplan, D.L., Marra, K.G. "Silk Fibroin Conduits: A Cellular and Functional Assessment of Peripheral Nerve Repair," *Annals of Plastic Surgery*, 2011. In Press.
5. **Kokai, L.E.**, Ghaznavi, A.M., Marra, K.G. "Incorporation of Double-Walled Microspheres into Polymer Nerve Guides for the Sustained Delivery of Glial Cell Line-Derived Neurotrophic Factor," *Biomaterials*, 2010, 31(8): 2313-2322.
6. **Kokai, L.E.**, Tan, H-P., Jhunjhunwala, S., Little, S.R., Frank, J.W., Marra, K.G. "Effect of an Anionic Surfactant on Polymer Phase Separation During Biphasic Double-Walled Microparticle Formation," *Journal of Controlled Drug Delivery,* 2010, 141:168-176.
7. **Kokai, L.E.**, Lin, Y-C., Oyster, N.M., Marra, K.G. "Diffusion of Soluble Factors through Degradable Polymer Nerve Guides: Controlling Manufacturing Parameters," *Acta Biomaterialia* Septmber 2009. 5(7) 2540 - 2550.
8. **Kokai, L.E.**, Rubin, J.P., Marra, K.G. "The Potential of Adipose-Derived Adult Stem Cells as a Source of Neuronal Progenitor Cells," *Plastic and Reconstructive Surgery* October 2005. 116(5) 1453-1460.

Textbook Chapter

1. Kokai, L.E.; Santiago, L.Y.; Marra, K.G. "Tissue Engineering of the Nervous System," In Introduction to Biomaterials, 2nd Edition, Ed. Guelcher S.A.; Hollinger, J.O.; CRC Press, 2010, In Press.

Patents

1. Sammak; Paul J.; **Kokai; Lauren E.**; Marra; Kacey G. "Transplantable cell growth niche and related compositions and methods," US Patent Application No. 20070077649, filed April 5, 2007.
2. Kokai, L.E.; Marra, K.G. "Implantable Medical Devices having Double Walled Microspheres," PCT/US11/51053, filed Sept. 9, 2011.
3. Pollock; Jacob; Yu; Xiaojie; Traina; Christopher; Manesis; Nicholas J.; **Kokai; Lauren**; Van Epps; Dennis; Messina; Darin. "Hyaluronic Acid-Collagen Matrices for Tissue Engineering," US Patent Application No. 20130116190 filed December 27, 2012.
4. Pollock; Jacob; **Kokai; Lauren**; Cui; Cunqi; Yu; Xiaojie; Van Epps; Dennis; Messina; Darin. "Crosslinked Hyaluorinc Acid-Collagen Gels for Improving Tissue Graft Viability and Soft Tissue Augmentation," US Patent Application No. 20130129835 filed January 14, 2013.

FUNDED AWARDS

1. **Co-Investigator.** Collaborative Corporate Research Agreement, Parcell Laboratories, Natick, MA, $31,976.33. 5/1/13 – 4/30/14.
2. **Co-Investigator.** University of Pittsburgh Center for Medical Innovation, Early stage medical technology research and development 2013 Pilot Funding Program, $15,000. 7/1/13 – 6/30/14.
3. **Co-Investigator.** Aesthetic Surgery Education and Research Foundation Grant, "Clinical Adipose Stem Cell Banking: Is Younger Better?" $65,000. 9/1/13 – 8/31/14.

SCIENTIFIC/TECHNICAL SKILLS

- Designing and performing *in vitro* characterization methods for biomaterials.
  Isolation and culture of primary and immortal cell lines (hESCs, adult stem cells, 3T3-L1, Schwann cells, etc.), cell viability assays (fluorescent: Alamar Blue, CyQuant, Apo-Live Glo; Luminescent: ATP-quantification; colorimetric: MTT, MTS), cellular imaging (fluorescent, confocal microscopy), ELISA, western blot, protein, DNA and RNA extraction from cells and tissue, IF and IHC, qRT-PCR, scanning electron microscopy.
- Developing and implementing *in vivo* animal studies for evaluating polymer tissue scaffolds, drug delivery vehicles and hydrogels for tissue repair.
  Material implantation and extraction, tissue grossing, embedding and sectioning for histology, immunohistochemistry, H&E, Masson's trichrome, surface-bound protein quantification.
- Designing studies for material optimization through DOE or multifactorial analysis.

PROFESSIONAL ASSOCIATIONS AND SERVICE

- International Federation for Adipose Therapeutics and Science
- Volunteer Judge, Pittsburgh Regional Science & Engineering Fair (2013)

SCIENTIFIC PEER REVIEWER

- Biomaterials, Journal of Biomaterials Science: Polymer Edition, Plastic and Reconstructive Surgery, Aesthetic Plastic Surgery, Aesthetic Surgery Journal, Stem Cells and Development, Cell Transplantation, Future Medicine

HONORS AND AWARDS

- Nominee, Allergan "Living the Values" Award for commitment to project success (2010)
- Fellowship, NIH Cellular Approaches to Tissue Engineering and Regeneration (CATER) McGowan Institute of Regenerative Medicine (2006 - 2008)
- Vice President, Pennsylvania Lambda Chapter, Tau Beta Pi Engineering Honor Society (2004)
- Founding President, University of Pittsburgh Chapter, Alpha Eta Mu Beta Bioengineering Honor Society, (2004)
- Internship, The Pittsburgh Tissue Engineering Initiative (2004)
- Summa Cum Laude, School of Engineering, University of Pittsburgh (2004)
- Bevier Fellowship, University of Pittsburgh School of Engineering (2000)