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**A. TRAINING AND AWARDS**

**Education**

- B.S. 1992 Summa Cum Laude, Chemical Engineering, Case Western Reserve University, Cleveland, OH
- M.S. 1993 Chemical Engineering, Case Western Reserve University, Cleveland, OH.  
Thesis Title: *Counteracting Flow Electrophoresis*
- Ph.D, 1997 Chemical Engineering and Scientific Computing, University of Michigan, Ann Arbor, MI.  
Dissertation Title: *Kinetics of Receptor, Ligand, and G-Protein Interaction for Signal Transduction: A Modeling Study*

**Research and Teaching Experience**

- Sept. 2014 - Professor and Chair, Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI
- August 2014 - Professor of Obstetrics and Gynecology, Feinberg School of Medicine, Northwestern University
- Sept. 2008 – August 2014 Director Biotechnology Training Program, Northwestern University.
- Sept. 2008 – August 2014 Professor of Chemical and Biological Engineering, Northwestern University, Evanston, IL.
- Sept. 2006 – August 2014 Institute for BioNanotechnology in Medicine (IBNAM) Resident Faculty Member
- Sept. 2005 – Aug. 2008 Associate Professor of Chemical and Biological Engineering, Northwestern University, Evanston, IL.
- Aug 2005 – July 2006 Visiting Assistant Professor, M.D. Anderson Cancer Center, Laboratory of Cellular and Tissue Engineering, Charles Patrick, Director, Houston, TX
- Sept. 1999 – Aug. 2005 Assistant Professor of Chemical and Biological Engineering, Northwestern University, Evanston, IL.  
Research areas: Cellular and Tissue Engineering:  
Courses taught: Material and Energy Balances, Chemical Kinetics and Reactor Design, Cell-Biomaterial Interactions, Cellular and Molecular Biology for Engineers
- March 1997 – Aug. 1999 Postdoctoral Research Fellow, University of Michigan, Departments of Biomedical Engineering and Biologic and Materials Science  
Principal Investigator: David J. Mooney, University of Michigan,  
Research Area: Tissue Engineering and Drug Delivery
- Sept. 1996 – Dec. 1996 Instructor, University of Toledo, Department of Chemical Engineering  
Course taught: Chemical Kinetics and Reactor Design
- Sept. 1992 – Feb. 1997 Graduate Research Assistant, University of Michigan  
Principal Investigator: Jennifer J. Linderman,  
Research Area: Mathematical modeling of signal transduction through G-protein coupled receptors
- June 1991 – August 1992 Graduate Research Assistant, Case Western Reserve University

Principal Investigator: Donald L. Feke

Research Area: Separation of charged macromolecules by counteracting flow electrophoresis

### Academic Awards and Honors

- Society for Biomaterials Clemson Award 2015
- AIChE Area 15d Plenary Award
- AIMBE Fellow (Elected 1/2010)
- NAE Frontiers in Engineering, Sept. 2005
- NSF CAREER Award
- NSF New Century Scholar Award
- NIH Postdoctoral Fellowship (UM - 8/97)
- NSF Graduate Student Fellowship (Univ. Michigan - 9/92)

### **B. PUBLICATIONS**

#### Journal Articles

1. **Shea, L.D.**, D.L. Feke, and U. Landau, "Counteracting Flow Electrophoresis: A Technique for Separating Biochemicals or Charged Macromolecules", *Biotechnol. Prog.*, 10, 246-252, 1994.
2. **Shea, L.D.** and J.J. Linderman, "Mechanistic Model of G-Protein Signal Transduction: Determinants of Efficacy and Effect of Precoupled Receptors", *Biochem. Pharm.* 53, 519-530, 1997.
3. **Shea, L.D.**, G. M. Omann, and J.J. Linderman, "Calculation of Diffusion-Limited Kinetics for the Reactions in Collision Coupling and Receptor Crosslinking", *Biophysical J.*, 73, 2949-2959, 1997.
4. **Shea, L.D.** and J.J. Linderman, "Effects of Compartmentalization on Plasma Membrane Reaction Rates and Enzyme Activation for a Collision Coupling", *J. Theor. Biol.*, 191, 249-258, 1998.
5. **Shea, L.D.**, B. Smiley, J. Bonadio, and D.J. Mooney, "DNA delivery from polymer matrices for tissue engineering", *Nature Biotechnology*, 17(6) 551-554, 1999.
6. M.C. Peters, **L.D. Shea**, and D.J. Mooney. "Protein and plasmid DNA delivery from tissue engineering matrices." *ACS Polymer preprints* 40: 273-274, 1999.
7. Sheridan, M, **L.D. Shea**, M.C. Peters and D.J. Mooney, "Bioabsorbable Polymer Scaffolds for Tissue Engineering Capable of Sustained Growth Factor Delivery", *J. Cont. Rel.*, 64 (1-3) 91-102, 2000.
8. Eiselt, P., J. Yeh, R.K. Latvala, **L.D. Shea**, and D.J. Mooney. " Porous carriers for biomedical applications based on alginate hydrogels." *Biomaterials* 21(19):1921-27, 2000.
9. **Shea, L.D.**, D. Wong, R.T. Franceschi, and D.J. Mooney, "Engineered bone development from a pre-osteoblast cell line on three-dimensional scaffolds", *Tissue Engineering* 6(6):605-618, 2000.
10. **Shea, L.D.**, R.R. Neubig, and J.J. Linderman, "Timing is everything: the role of kinetics in G-protein activation" *Life Sciences*. 68:647-658, 2000
11. Shea LD, Mooney DJ. Nonviral DNA delivery from polymeric systems. *Methods Mol Med.* 2001;65:195-207. doi: 10.1385/1-59259-139-6:195. PubMed PMID: 21318756.
12. Nof, M., and **L.D. Shea**, "Drug-releasing scaffolds fabricated from drug-loaded microspheres", *J. Biomed. Mat. Res.* 59(2):349-357, 2002.
13. Segura, T. and **L.D. Shea**. "Surface-Tethered DNA Complexes for Enhanced Gene Delivery" *Bioconj. Chem.* 13:621-29, 2002.
14. Jang, J., and **L.D. Shea**, "Controllable delivery of non-viral DNA from porous scaffolds", *J. Cont. Rel.* 86: 157-168, 2003.
15. Pangas, S.A., H. Saudye, **L.D. Shea**, and T. K. Woodruff, " A Novel Approach for the Three Dimensional Culture of Granulosa Cell-Oocyte Complexes", *Tissue Eng* 9(5), 1013-1021 2003.
16. Kreeger, P., T.K. Woodruff, and **L.D. Shea**, "Murine granulosa cells morphology and function are regulated by a synthetic RGD matrix", *Mol. and Cell. Endocrin.* 205(1-2):1-10, 2003.

17. Segura, T., M. Volk, and **L.D. Shea** "Substrate-Mediated DNA Delivery: Role of the Cationic Polymer Structure and Extent of Modification", *J Cont Rel*, 93(1): 69-84, 2003.
18. Pannier, A.K. and **L.D. Shea** "Controlled release systems for DNA delivery", *Molecular Therapy* 10(1): 19-26, 2004.
19. **Shea, L.D.**, and T.L. Houchin, "Modular design of non-viral vectors with bioactive components", *Trends in Biotech*, 22(9):429-431, 2004.
20. Whittlesey, K.J., and **L.D. Shea**, "Delivery Strategies for Drugs, Proteins, and DNA: The Neuroscience/Biomaterial Interface", *Expt Neurol* 190(1):1-16, 2004.
21. Pannier, A.K. and **L.D. Shea**, "Controlled release systems for non-viral vectors", *The Journal of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University*, Vol IX, p. 35-39, 2004
22. Jang, J.H., T.L. Houchin, and **L.D. Shea** "Gene delivery from polymer scaffolds for tissue engineering", *Exp. Rev. Med. Dev.*, 1(1): 127-138, 2004
23. Segura, T., P. Chung, R.E. Webber, K.R. Shull, and **L.D. Shea** "Crosslinked hyaluronic acid hydrogels: a strategy to functionalize and pattern", *Biomaterials* 26(4): 359-371 2005.
24. Segura, T., P. Chung, and **L.D. Shea** "DNA Delivery from Hyaluronic Acid-Collagen Hydrogels via a substrate-mediated approach", *Biomaterials* 26:1575-1584, 2005.
25. Bengali, Z., A. Pannier, T. Segura, B.A. Anderson, J.H. Jang, T. Mustoe, and **L.D. Shea** "Gene delivery through cell culture substrate adsorbed DNA complexes " *Biotechnol. Bioeng.* **90** (3): 290-302, 2005.
26. Yang, Y., L. De Laporte, C. Rives, J.H. Jang, K. Shull, and **L.D. Shea**, "Neurotrophin releasing single and multiple lumen nerve conduits", *J. Cont. Rel.* 104(3):433-46, 2005.
27. Kreeger, P.K. N.N. Fernandes, T. K. Woodruff, and **L.D. Shea**, "Regulation of Murine Follicle Development by Follicle Stimulating Hormone in a Three-Dimensional In Vitro Culture System is Dependent on Follicle Stage and Dose" *Biol. Reprod* 73(5):942-50, 2005.
28. Bengali, Z., and **L.D. Shea**, "Gene Delivery by Immobilization to Cell-Adhesive Substrates", *MRS Bulletin* 30(9): 659-662, 2005.
29. Jang, J., C. Rives, and **L.D. Shea**, "Plasmid Delivery in Vivo from Porous Tissue-Engineering Scaffolds: Transgene Expression and Cellular Transfection", *Mol Ther*, 12(3) 475-483, 2005.
30. Pannier, A.K. BC. Anderson, and **L.D. Shea** "Substrate-Mediated Delivery from Self-Assembled Monolayers: Effect of Surface Ionization, Hydrophilicity, and Patterning", *Acta Biomat.* 1(5), 511-522, 2005.
31. Whittlesey, K.J., and **L.D. Shea**, "Neurotrophic factor expression by degradable scaffold-mediated lipofection" *Biomaterials* 27 (11): 2477-86 2006.
32. Kreeger PK, Deck JW, Woodruff TK, Shea LD. The in vitro regulation of ovarian follicle development using alginate-extracellular matrix gels. *Biomaterials.* 2006 Feb;27(5):714-23. Epub 2005 Aug 1. PubMed PMID: 16076485; PubMed Central PMCID: PMC2648392.
33. De Laporte, L., J. Cruz-Rea, **L.D. Shea** "Modular non-viral vectors for gene delivery", *Biomaterials* 27:947-954, 2006.
34. Jang, J.H., T. Houchin, Z. Bengali, and **L.D. Shea**. "Surface adsorption of DNA to tissue engineering scaffolds for efficient gene delivery" *J Biomed Mater Res A.* 77(1):50-8 2006.
35. Salvay, D., and **L.D. Shea**, "Inductive tissue engineering by protein and DNA releasing scaffolds", *Mol Biosyst* 2(1) 36-48 2006.
36. H. Blomeier, X. Zhang, C. Rives, E. Hughes, M Baker, M. Brissova, A.C. Powers, D.B. Kaufman, **L.D. Shea**, W.L. Lowe, Jr., "Polymer Scaffolds as Synthetic Microenvironments for Extrahepatic Islet Transplantation", *Transplantation* 82(4) 452-9 2006.
37. Jang, J.H., **L.D. Shea**, "Intramuscular delivery of DNA releasing microspheres: microsphere properties and transgene expression" *J Control Release.* 112(1):120-8. 2006.
38. Nieman CL, R Kazer, RE Brannigan, LS Zoloth, PL Chase-Lansdale, K, Kinahan, KJ Dilley, D. Roberts, **LD Shea**, TK Woodruff. "Cancer survivors and infertility: a review of a new problem and novel answers" *J Support Oncol.* Apr;4(4):171-8, 2006

39. Xu, M., P.K. Kreeger, **L.D. Shea**, and T.K. Woodruff, "Tissue Engineered Follicles Produce Live, Fertile Offspring", *Tissue Eng* 12(10): 2739-2746, 2006.
40. Bristol-Gould, S.K., P.K. Kreeger, C.G. Selkirk, S.M. Kilen, K.E. Mayo, **L.D. Shea** and T.K. Woodruff, "Fate of the initial follicle pool: Empirical and mathematical evidence supporting its sufficiency for adult fertility" *Dev. Biol.* 298(1) 149-154, 2006
41. Bristol-Gould, S.K., P.K. Kreeger, C.G. Selkirk, S.M. Kilen, R.W. Cook, J.L. Kipp, **L.D. Shea**, K.E. Mayo and T.K. Woodruff "Postnatal regulation of germ cells by activin: The establishment of the initial follicle pool" *Dev. Biol.* 298 (1) 132-148, 2006
42. Berkholtz, C.B., B.E. Lai, T.K. Woodruff, **L.D. Shea**, "Distribution of extracellular matrix proteins type I collagen, type IV collagen, fibronectin, and laminin in mouse folliculogenesis." *Histochem Cell Biol.* 126(5) 583-92, 2006
43. Berkholtz, C.B., **L.D. Shea**, and T.K. Woodruff, "Extracellular matrix functions in follicle maturation", *Semin Reprod Med.* 24(4) 262-9, 2006.
44. Xu, M., E. West, **L.D. Shea**, and T.K. Woodruff "Identification of a Stage-Specific Permissive *in vitro* Culture Environment For Follicle Growth and Oocyte Development", *Biol Reprod.* 75(6) 916-23, 2006.
45. Cheema, S.K., E. Chen, **L.D. Shea**, A.B. Mathur, "Regulation and Guidance of Cell Behavior for Tissue Regeneration via the siRNA Mechanism", *Wound Repair Regen* 15(3) p. 286-95 2007. [PMID: 17537114]
46. Houchin-Ray, T.L., K.J. Whittlesey, and **L.D. Shea**, "Spatially Patterned Gene Delivery for Directed Neurite Outgrowth", *Mol. Ther.* 15(4) 705-712, 2007. [PMC2648834]
47. Wieland, J., T.L. Houchin-Ray, and **L.D. Shea**, "Non-viral vector delivery from PEG-hyaluronic acid hydrogels", *J Cont Rel.*, 120(3):233-41 2007. [PMC2648399]
48. T.F. Lerch, M. Xu, T. S. Jardetzky, K.E. Mayo, I. Radhakrishnan, R. Kazer, **L.D. Shea**, and T.K. Woodruff "At the Cutting Edge: The Structures that Underlie Normal Reproductive Function" *Mol Cell Endo.* 267(1-2):1-5 2007 [PMC1919436]
49. Houchin-Ray, T.L., L. Swift, J.H. Jang, and **L.D. Shea**, "Patterned PLG substrates for localized DNA delivery and directed neurite extension", *Biomater.* 28(16): 2603-11 2007. [PMC1876731]
50. **Shea, L.D.**, "Back to the science of stem cell research – CHI's 2<sup>nd</sup> annual meeting", *iDrugs* 9(10) 699-701 2006. [PMC2648404]
51. De Laporte, L., and **L.D. Shea** "*Matrices and Scaffolds for DNA Delivery in Tissue Engineering*", *Adv. Drug Del. Reviews* 59(4-5):292-307 2007 [PMC1949490]
52. Pannier, A.K., E. Ariazi, A.D. Bellis, Z. Bengali, V.C. Jordan, and **L.D. Shea** "Bioluminescence Imaging for Assessment and Normalization in Transfected Cell Arrays", *Biotech and Bioeng.* 98(2) 486-97 2007. [PMC2648395]
53. Bengali, Z. J.C. Rea, and **L.D. Shea** "Gene Expression and internalization following vector immobilization to proteins: dependence on protein identity and density" *J Gene Med* 9(8) 668-78. 2007 [PMC2659664]
54. West, E.R., **Shea, L.D.**, and Woodruff, TK. Engineering the follicle microenvironment. *Semin Reprod Med.* 25(4):287-99, 2007. [PMC2648402]
55. West, E., M. Xu, T.K. Woodruff, and **L.D. Shea**, "Physical properties of alginate hydrogels and their effects on *in vitro* follicle development", *Biomaterials*, 28(30) 4439-48, 2007. [PMC2034204]
56. Weiss, M.S., J.S. Jeruss, and **L.D. Shea**, "Tunable Microenvironments for Three-Dimensional Culture in Cancer Research", *The Journal of the Roert H. Lurie Comprehensive Cancer Center*, XI(2), 26-31, 2007.
57. Xu M, Woodruff TK, **L.D. Shea**. "Bioengineering and the ovarian follicle", *Cancer Treat Res.*; 138:75-82, 2007.
58. Woodruff, T.K. and **L.D. Shea** "The Role of the Extracellular Matrix in Ovarian Follicle Development", *Reprod Sci.* Dec;14(8 Suppl):6-10. 2007. [PMC2648348]

59. Pannier, A.K., J. Wieland, and **L.D. Shea**, "Surface Polyethylene Glycol Enhances Substrate-Mediated Gene Delivery by Nonspecifically- Bound Complexes" *Acta Biomaterialia* Jan;4(1):26-39 2008. [PMC2170460]
60. Salvay, D.M., C.B. Rives, X. Zhang, F. Chen, D.B. Kaufman, W.L. Lowe, and **L.D. Shea** "Extracellular Matrix Proteins Adsorbed To PLG Microporous Scaffolds Promote The Reversal Of Diabetes Following Extrahepatic Islet Transplantation", *Transplantation* 85(10):1456-64 2008. [PMC2597660]
61. Barbolina MV, Adley BP, Shea LD, Stack MS. Wilms tumor gene protein 1 is associated with ovarian cancer metastasis and modulates cell invasion. *Cancer*. 2008 Apr 1;112(7):1632-41. doi: 10.1002/cncr.23341. PubMed PMID: 18260155.
62. Rea JC, Barron AE, **Shea LD**. "Peptide-mediated lipofection is governed by lipoplex physical properties and the density of surface-displayed amines." *J Pharm Sci*. Nov;97(11):4794-806 2008. [PMC2648398]
63. Barbolina MV, Adley BP, Kelly DL, Fought AJ, Scholtens DM, **Shea LD**, Stack MS, Motility-related actinin alpha-4 is associated with advanced and metastatic ovarian carcinoma. *Lab Invest*. Jun;88(6):602-14 2008. [PMC2849305]
64. Houchin-Ray, T. A. Huang, E. West, M. Zelivyanskaya, **L.D. Shea**, "Spatially Patterned Gene Expression for Guided Neurite Extension ", *J. Neuro. Res*. 2009 Mar;87(4):844-56.. [PMC2764322]
65. Rives, C., A. des Rieux, M. Zelivyanskaya, S. Stock, W.L. Lowe, and **L.D. Shea**, "Layered PLG Scaffolds for *In Vivo* Plasmid Delivery", *Jan*;30(3):394-401. 2009. [PMC2642007]
66. Rea, J., R. Gibly, A. Barron, and **L.D. Shea**, "Self-Assembling Peptide-Lipoplexes for Substrate-Mediated Gene Delivery ", *Acta Biomaterialia* 2009 Mar;5(3):903-12. [PMC2752203]
67. West, E., MB Zelinski, LA Kondapalli, C Gracia, J Chang, C. Coutifaris, J Critser, RL Stouffer, **LD Shea**, TK Woodruff "Preserving female fertility following cancer treatment: current options and future possibilities " *Pediatric Blood and Cancer* 53(2):289-95, 2009. [PMC3081672]
68. De Laporte, L., Y. Yang, M. Zelivyanskaya, B. Cummings A. Anderson, and **L.D. Shea** "Plasmid releasing multiple channel bridges for transgene expression after spinal cord injury", *Mol Ther* 2009 Feb;17(2):318-26. [PMC2835056]
69. Bengali Z, Rea JC, Gibly RF, Shea LD. Efficacy of immobilized polyplexes and lipoplexes for substrate-mediated gene delivery. *Biotechnol Bioeng*. 2009 Apr 15;102(6):1679-91. doi: 10.1002/bit.22212. PubMed PMID: 19148921; PubMed Central PMCID: PMC2911033.
70. West-Farrell, E., M. Xu, TK Woodruff, **L.D. Shea**, "The mouse follicle microenvironment regulates antrum formation and steroid production: alterations in gene expression profiles" *Biol Reprod*, Mar;80(3):432-9, 2009. [PMC2764303]
71. De Laporte L, AL Yan **L.D. Shea** "Local gene delivery from ECM-coated poly(lactide-co-glycolide) multiple channel bridges after spinal cord injury." *Biomaterials*. 2009 Jan 12 [PMC2752148]
72. des Rieux, A, A. Shikanov, **L.D. Shea** "Fibrin hydrogels as non-viral vector delivery systems for tissue engineering", *J Cont Rel Jun* 5;136(2):148-54, 2009. [PMC2752208]
73. Xu, M., A. Banc, T.K. Woodruff, and, **LD Shea**, "Secondary follicle growth and oocyte maturation by culture in alginate hydrogel following cryopreservation of the ovary or individual follicles" *Biotech Bioeng* 103(2):378-86 2009. [PMC2778231]
74. Houchin-Ray, T, M. Zelivyanskaya, A. Huang, **L.D. Shea** "Nonviral gene delivery transfection profiles influence length of neurite extension in an in vitro co-culture model". *Biotech and Bioeng*. 103(5):1023-33, 2009 [PMC2778227]
75. Xu, M., S.L. Barrett, E. West-Farrell, L.A. Kondapalli, S.E. Kiesewetter, **L.D. Shea**, and T.K. Woodruff, "In vitro Grown Human Ovarian Follicles from Cancer Patients Support Healthy Oocyte Growth", *Hum Reprod Epub*, Jul 13 2009. [PMC2743446]
76. Xu, M., E.R. West, R.L. Stouffer, **L.D. Shea**, T.K. Woodruff, and M. B. Zelinski, "Encapsulated three-dimensional culture supports development of nonhuman primate secondary follicles", *Biol Reprod*. 103(2):378-86 2009. [PMC2731985]



77. Jin, S., L. Lei, **L.D. Shea**, and T.K. Woodruff, "A novel two-step strategy for in vitro culture of early-stage ovarian follicles in the mouse", *Fertility and Sterility*, May 15;93(8):2633-9, 2010. [PMC2873094].
78. Zhang, X., H. Tang, R. Hoshi, L. De Laporte, H. Qiu, X. Xu, **L.D. Shea**, and G. Ameer "Sustained transgene expression via citric acid-based polyester elastomers" *Biomaterials*, 2009 May 30(13):2632-41. PMID 19200593
79. Barbolina, M. **L.D. Shea**, and S. Stack "Downregulation of Connective Tissue Growth Factor by Three-Dimensional Matrix Enhances Ovarian Carcinoma Cell Invasion" *Int J Cancer*, Aug 15;125(4):816-25, 2009. [PMC2849282]
80. Tingen, C.M. S.K. Bristol-Gould, SE. Kiesewetter, J.T Wellington, **L.D. Shea**, and T.K. Woodruff, "Pre-pubertal Primordial Follicle Loss is Not Due to Classical Apoptotic Pathways", *Biol Reprod*. 2009 Jul;81(1):16-25. [PMC 3093983].
81. Murthi, M., **L.D. Shea**, and R.Q. Snurr, "Numerical Problems and Agent-Based Models for a Mass Transfer Course", *Chem Eng Educ*, 43(2), Spring 2009.
82. Yang, Y., L. DeLaporte, M. Zelivyanskaya, B. Cummings, A. Anderson, and **L.D. Shea** "Multiple channel bridge in the injured spinal cord: Characterization of Host Response", *Tissue Eng* 2009 Nov;15(11):3283-95. [PMC2792065]
83. Roh J, Bae J, Lee K, Mayo K, Shea L, Woodruff TK. Regulation of Wilms' tumor gene expression by nerve growth factor and follicle-stimulating hormone in the immature mouse ovary. *Fertil Steril*. 2009 Apr;91(4 Suppl):1451-4. doi: 10.1016/j.fertnstert.2008.07.012. Epub 2008 Sep 6. PubMed PMID: 18774569; PubMed Central PMCID: PMC2749456.
84. Shikanov, A., M. Xu, T.K. Woodruff, and **L.D. Shea** "Interpenetrating Fibrin-Alginate Matrices for *in vitro* Ovarian Follicle Development" *Biomaterials* 2009 Oct;30(29):5476-85. [PMC2906124]
85. Shin, S. D.M. Salvay, and **L.D. Shea** "Lentivirus delivery by adsorption to tissue engineering scaffolds", *JBMR*, Jun 15;93(4):1252-9, 2010. [PMC2906124]
86. Huang GT, Yamaza T, Shea LD, Djouad F, Kuhn NZ, Tuan RS, Shi S, "Stem/progenitor cell-mediated de novo regeneration of dental pulp with newly deposited continuous layer of dentin in an in vivo model" *Tissue Eng Part A*. Feb;16(2):605-15, 2010. [PMC2813150]
87. Rea, J.C., R.F. Gibly, N.E. Davis, A.E. Barron, and **L.D. Shea**, "Engineering Surfaces for Substrate-Mediated Gene Delivery using Using Recombinant Proteins", *Biomacromolecules* 2009 Oct 12;10(10):2779-86. [PMC2765786]
88. Shin, S. and **L.D. Shea**, "Lentivirus immobilization to nanoparticles for enhanced and localized delivery from hydrogels", *Mol Therapy*. Apr;18(4):700-6, 2010. [PMC2862523]
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91. De Laporte, L. A. des Rieux, M.L. Zelivyanskaya, N.M. De Clerck, A.A. Postnov, and **L.D. Shea**, "VEGF and FGF-2 delivery from spinal cord bridges to enhance angiogenesis following injury", *JBMR*, Sep 1;98(3):372-82, 2011. [PMC3190227]
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93. Shepard JA, Huang A, Shikanov A, Shea LD. Balancing cell migration with matrix degradation enhances gene delivery to cells cultured three-dimensionally within hydrogels. *J Control Release*.

- 2010 Aug 17;146(1):128-35. doi: 10.1016/j.jconrel.2010.04.032. Epub 2010 May 5. PubMed PMID: 20450944; PubMed Central PMCID: PMC2914156.
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  95. Shin S, Tuinstra HM, Salvay DM, Shea LD. Phosphatidylserine immobilization of lentivirus for localized gene transfer. *Biomaterials*. 2010 May;31(15):4353-9. doi: 10.1016/j.biomaterials.2010.02.013. Epub 2010 Mar 4. PubMed PMID: 20206382; PubMed Central PMCID: PMC2845527.
  96. Jin S, Lei L, **Shea LD**, Zelinski MB, Stouffer RL, Woodruff TK. "Markers of growth and development in primate primordial follicles are preserved after slow cryopreservation". *Fertil Steril*. May 15;93(8):2627-32. [PMC2873131].
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  98. Barbolina, M. Kim M, Liu Y, Shepard J, Belmadani A, Miller RJ, **Shea LD**, Stack MS, "Microenvironmental regulation of chemokine (C-X-C-motif) receptor 4 in ovarian carcinoma", *Mol Cancer Res*. May;8(5):653-64 2010. [PMC2883461]
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### **Book Chapters**

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4. Kreeger, P. and **L.D. Shea**, “Tissue engineering scaffolds for directed cell function”, ed. A.K. Dillow and A. Lowman, Marcel-Dekker, Marcel Dekker, Inc. 2002.
5. Bengali, Z. , C. Rives, and **L.D. Shea** “Gene Delivery from Tissue Engineering Matrices.” In *Polymeric Gene Delivery: Principles And Applications*. ed. M.M. Amiji. in press.
6. Segura, T. Brian C Anderson and **L.D. Shea**, “Biodegradable materials for DNA delivery” In Handbook of Biodegradable Polymeric Materials and Their Applications, ed. Surya Mallapragada. In press
7. Xu, M., T.K. Woodruff, and **L.D. Shea**, “Bioengineering and the ovarian follicle”, In Oncofertility. Ed. T.K. Woodruff
8. Smith, R., T.K. Woodruff, and **L.D. Shea**, “Designing Follicle-Environment Interactions With Biomaterials”, In Oncofertility 2<sup>nd</sup> edition. Ed. T.K. Woodruff
9. Silber, S., **L.D. Shea**, and T.K. Woodruff, “To Transplant or Not to Transplant – That is the Question” In Oncofertility 2<sup>nd</sup> edition. Ed. T.K. Woodruff.
10. Tagler, T.K. Woodruff, and **L.D. Shea**, “Contributions of Ovarian Stromal Cells to Follicle Culture“, in Principles and Practice of Fertility Preservation, Donnez and Kim.
11. S.K. Seidlits, K.A. Hlavaty, **L.D. Shea**. (2014) “DNA delivery for regeneration” in Biomaterials and Regenerative Medicine, ed. P.X. Ma. Cambridge University Press, Cambridge, MA. *supposed to be published June 2014*.

### **C. PATENTS AND INVENTION DISCLOSURES**

1. Gas Foaming to Create Open Pore Structure, US Patent No.: 6,281,256, August 28, 2001
2. Sustained drug delivery from structural matrices, patent pending
3. Surface associated delivery of genes and oligonucleotides, patent pending
4. Polymer scaffolds for the culture and maturation of ovarian follicles, patent pending
5. Biodegradable Scaffolds and Uses Thereof, patent pending
6. High throughput transcriptional activity profiling, invention disclosure to NU
7. Peptide coupled biodegradable particles for tolerance induction, invention disclosure to NU
8. 3-D transfected cell arrays, invention disclosure to NU
9. Stage specific Follicular Maturation Systems, invention disclosure to NU
10. Lentivirus immobilization for enhanced and localized gene delivery from hydrogels, invention disclosure to NU.
11. Transfected Cell Array for Transcription Factor Analysis, invention disclosure to NU
12. Interpenetrating Semi-Degradable Fibrin-Alginate Hydrogels, invention disclosure to NU
13. Extracellular Matrix Protein-coated Scaffolds Promote the Reversal of Diabetes following Extrahepatic Islet Transplantation, invention disclosure to NU
14. Layered Polymer Scaffolds for Protein and DNA delivery, invention disclosure to NU



15. Exendin-4 releasing scaffolds for islet transplantation, invention disclosure to NU
16. Gleevac activates primordial follicles in vitro, invention disclosure to NU
17. Microporous Biodegradable Polymer Scaffolds for Extrahepatic Islet Transplantation
18. Phosphatidylserine immobilization of lentivirus for localized gene delivery in regenerative medicine, invention disclosure to NU
19. Peptide Coupled Biodegradable Particles for Tolerance Induction, invention disclosure to NU.
20. Three-dimensional transfected cell array, invention disclosure to NU
21. Microspheres for Transcatheter Delivery of Sorafenib to Liver Tumors, invention disclosure to NU
22. Synthetic scaffolds engineered to function as a pre-metastatic niche to detect metastasis, invention disclosure to NU
23. Peptide-coupled carboxylate-surface-functionalized biodegradable poly(lactide-co-glycolide) particles for the induction of immunological tolerance, invention disclosure to NU
24. Scaffold delivery of antigen-specific suppressor cells for controls of graft rejection, invention disclosure to NU

#### D. PRESENTATIONS

##### Invited Lectures

1. **L.D. Shea**, D.J. Mooney, "Sustained release as a mechanism to enhance gene transfer" Symposia on Gene Therapy, University of Michigan, Ann Arbor, MI 1999.
2. **L.D. Shea**, "Gene delivery from tissue engineering scaffolds" Domain Dinner on Gene Therapy and Tissue Engineering, Northwestern University, Evanston, IL 1999.
3. **L.D. Shea**, "Controlled gene delivery for guided tissue formation," Bone Tissue Engineering Center, Carnegie Mellon University February, 2000
4. **L.D. Shea**, "Scaffolds for directing tissue formation", Department of Bioengineering, University of Illinois-Chicago, September 2001.
5. **L.D. Shea**, " Drug-releasing polymer scaffolds for nerve regeneration" Engineering Tissue Growth, Conference, Pittsburgh, PA, March 2002.
6. **L.D. Shea**, "Functional scaffolds for tissue formation" Department of Anatomy, Rush Medical College. June 2002.
7. **Shea, L.D.**, K. Whittlesey, T. Segura, J. Jang, Y. Yang, "Tissue Engineering Scaffolds for Controlled Protein and Plasmid Delivery", 2nd Joint EMBS-BMES Conference, Houston, TX, October 2002.
8. **Shea, L. D.**, "Polymeric DNA delivery for controlled gene transfer", Becton Dickinson, Raleigh, NC, July 2003
9. **Shea, L.D.**, "Tissue engineering scaffolds for controlled DNA delivery", Massachusetts General Hospital, Harvard University, September 18, 2003.
10. **Shea, L.D.** University of Pittsburgh, McGowan Institute for Regenerative Medicine, February 20, 2004.
11. **Shea, L.D.**, Institute for Biological Engineering and Biotechnology, Swiss Federal Institute of Technology Lausanne, Lausanne, Switzerland May 3, 2004
12. **Shea, L.D.**, Workshop on DNA Supramolecular Assemblies, University of Avignon France, May 5-6, 2004.
13. **Shea, L.D.**, Ecole Nationale Supérieure de Chimie de Paris, Host: Dr. Daniel Scherman, Laboratoire de Pharmacologie Chimique et Génétique, Department of Pharmacy, May 2004.
14. **Shea, L. D.** Gordon Conference on Signal Transduction by Synthetic Extracellular Matrices, July, 2004.
15. **Shea, L.D.**, Polymeric Delivery systems for DNA, University of Illinois-Chicago, Department of Pharmacy, September 2004.
16. **Shea, L.D.**, Biophex Conference, San Francisco, CA September 28, 2004
17. **Shea, L.D.**, University of Pennsylvania, February 2005
18. **Shea, L.D.**, MD Anderson Cancer Center, Department of Plastic Surgery, August 2005
19. **Shea, L.D.**, Yale University, Department of Biomedical Engineering, October 2005

20. **Shea, L.D.**, University of Texas at Austin, November 2005
21. **Shea, L.D.**, Baylor College of Medicine, Reproductive Sciences Division, January 2006
22. **Shea, L.D.**, American Society Gene Therapy, June 2006
23. **Shea, L.D.** Patterned tissue formation through spatially patterned gene delivery MRS, San Francisco, CA, April 2006
24. **Shea, L.D.**, Gordon Conference on Signal Transduction by Synthetic Extracellular Matrices, New London, CT, July 2006
25. **Shea, L.D.**, Cambridge Healthtech Institute, Boston, MA, August 2006
26. **Shea, L.D.**, 5<sup>th</sup> Annual Gene Therapy Symposium for Heart, Lung, and Blood Diseases, Sonoma, CA, November 2006
27. **Shea, L.D.**, Univ of Illinois, December 2006
28. **Shea, L.D.**, Univ of Washington, January 2006
29. **Shea, L.D.**, ESHRE, Lubeck Germany, January 2007
30. **Shea, L.D.**, UCLA, April 2007
31. **Shea, L.D.**, Univ. of Maryland, April 2007
32. **Shea, L.D.**, Ovarian Workshop, July 2007
33. **Shea, L.D.**, Gordon Conference on Biomaterials, Biocompatibility and Tissue Engineering, July 2007
34. **Shea, L.D.**, Wayne State University, October 2007
35. **Shea, L.D.**, University of Minnesota, December 2007
36. **Shea, L.D.**, University of Wisconsin, January 2008
37. **Shea, L.D.**, Purdue University, February 2008
38. **Shea, L.D.**, Gordon Conference on Reproductive Biology Tract, August 2008
39. **Shea, L.D.**, Michigan State University, Chemical Engineering November 2008
40. **Shea, L.D.**, European Society of Human Reproduction, Brussels, Belgium, January 2009.
41. **Shea, L.D.**, University of Wisconsin, Chemical and Biomolecular Engineering, February 2009.
42. **Shea, L.D.**, Loyola University, Biology, February 2009.
43. **Shea, L.D.**, 5<sup>th</sup> Annual RISE Area Conference. University of Puerto Rico, Rio Piedras Campus. March 2009
44. **Shea, L.D.**, Georgia Technological Institute, Biomedical Engineering, April 2009.
45. **Shea, L.D.**, University of California, Santa Barbara, Chemical Engineering, May 2009.
46. **Shea, L.D.**, University of Illinois-Chicago, Department of Pharmacological Sciences, Sept. 2009.
47. **Shea, L.D.**, University of Michigan, Oct. 2009.
48. **Shea, L.D.**, Northeastern University, Oct. 2009.
49. **Shea, L.D.**, NHLBI Gene Therapy meeting, Sonoma CA, Nov. 2010.
50. **Shea, L.D.**, Iowa, January 2011.
51. **Shea, L.D.**, Arizona State University, April 2011.
52. **Shea, L.D.**, American Society for Cell and Gene Therapy, May 2011
53. **Shea, L.D.**, Biotechniques Online Symposium, October 2011
54. **Shea, L.D.**, AIChE, Annual Conference, Young Faculty Forum, October 2011
55. **Shea, L.D.**, Cornell University, November 2011
56. **Shea, L.D.**, Vanderbilt University, January 2012
57. **Shea, L.D.**, SUNY Buffalo, February 2012
58. **Shea, L.D.**, NICHD/NIH, April 2012
59. **Shea, L.D.**, Gynazur, Nice, France 2012
60. **Shea, L.D.**, Rensselaer Polytechnic Institute, September 2012
61. **Shea, L.D.**, Seoul National University, September 2012
62. **Shea, L.D.** Yonsei University, September 2012
63. **Shea, L.D.**, Society for Biomaterials, "Transcription factor activity arrays for large scale signaling analysis", October 2012
64. **Shea, L.D.**, Society for Biomaterials, "Systems approach to nerve regeneration" October 2012
65. **Shea, L.D.**, AIChE Area 15d/e plenary, October 2012

66. **Shea, L.D.**, Iowa State University, January 2013
67. **Shea, L.D.**, University of Michigan, February 2013
68. **Shea, L.D.**, Duke University, February 2013
69. **Shea, L.D.**, Society for the Study of Reproduction, President's symposium. July 2013
70. **Shea, L.D.**, Gordon Conference on Biomaterials, July 2013

### Research presentations

1. **L.D. Shea**, J.J. Linderman, "Importance of Spatial Information in Signal Transduction: A Monte Carlo Study", BMES 1995 Annual Fall Meeting, Boston, MA.
2. **L.D. Shea**, J.J. Linderman, "Diversity of Cell Responses Regulated by Signal Transduction through G-protein Linked Receptors", 1995 Annual AIChE meeting, Miami, FL.
3. J.J. Linderman, P.A. Mahama, **L.D. Shea**, "Modeling of Signal Transduction via G-Proteins", Second International Conference on Cell Engineering, La Jolla, CA, 1996.
4. **L.D. Shea**, J.J. Linderman, "Spatial Effects on Reactions in the Plasma Membrane", 1996 Annual AIChE meeting, Chicago, IL.
5. **L.D. Shea**, J.J. Linderman, "Ternary Complex Models and G-Protein Activation", 1997 Annual AIChE meeting, Los Angeles, CA.
6. **L.D. Shea**, K. Bouhadir, D.J. Mooney, poster "Alginate Inspired Hydrogels", Keystone Symposia on Tissue Engineering, Copper Mountain, CO., January 1998.
7. M. Haar, **L.D. Shea**, L. Harris, and D.J. Mooney Fabrication of bioabsorbable scaffolds for guided tissue regeneration. American Association for Dental Research, Minneapolis, MN March, 1998.
8. **L.D. Shea**, E. Smiley, J. Bonadio, and D.J. Mooney, "Sustained delivery of DNA from structural matrices as a method to enhance in vivo gene expression." 1998 Annual AIChE mtg, Miami, FL.
9. **L.D. Shea**, D. Wong, R.T. Franceschi, and D.J. Mooney, "Polymer Matrices for guided tissue regeneration: suitability as a template for bone formation." 1998 Annual AIChE mtg, Miami, FL.
10. **L.D. Shea**, E. Smiley, J. Bonadio, and D.J. Mooney. "Sustained delivery of DNA from structural matrices to enhance tissue development." Tissue Engineering Society, Orlando, FL, December 1998.
11. **L.D. Shea**, E. Smiley, J. Bonadio, and D.J. Mooney. "Sustained plasmid DNA delivery from matrices for guided tissue regeneration." IADR, Vancouver, BC, March 1999.
12. **L.D. Shea**, E. Smiley, J. Bonadio, and D.J. Mooney. "Sustained plasmid delivery to enhance tissue formation." 1999 Annual AIChE meeting, Dallas, TX
13. M. Nof, M.C. Peters, D.J. Mooney, and **L.D. Shea**. "Turning DNA-loaded microspheres into DNA-releasing scaffolds." 2000 Annual AIChE meeting, Los Angeles, CA
14. K. Whittlesey and **L.D. Shea** "Polymeric delivery of DNA lipoplexes for stimulating neurite extension" 2001 Annual AIChE meeting, Reno, Nevada
15. S. Pangas, H. Saudye, P. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Hydrogel Scaffolds for the Culture of Primary Ovarian Follicles" 2001 Annual AIChE meeting, Reno, Nevada
16. Segura, T., and **L.D. Shea**, "Surface-mediated DNA delivery" 2002 Society for Biomaterials, Tampa, FL
17. Whittlesey, KJ and LD Shea. "A Tissue Engineering Approach To Nerve Regeneration" Society for the Advancement of Chicanos and Native Americans in Science Annual Meeting. September, 2002.
18. P.K. Kreeger, C.B. Berkholtz, T.K. Woodruff, and **L.D. Shea**. iA Novel System for *In Vitro* Culture of Immature Granulosa-Oocyte Complexes. *Northwestern University Reproductive Mini-Symposium*. Evanston, IL. Oct. 2002. Constance Campbell Presentation Award Winner.
19. Segura, T., and **L.D. Shea**, "Characterization of Surface Mediated Delivery of DNA", 2002 Annual AIChE meeting, Indianapolis, IN.
20. J. Jang, and **L.D. Shea** "Porous scaffolds for controlled release of DNA complexes", 2002 Annual AIChE meeting, Indianapolis, IN.
21. Segura, T., and L. D. Shea "Gene Delivery by DNA Complexes Tethered to Hyaluronic Acid Substrates", 2003 Society For Biomaterials, Reno, NV

22. Kreeger, P., T.K. Woodruff, and **L.D. Shea** "In vitro maturation of granulosa-oocyte complexes in synthetic scaffolds", 2003 Society For Biomaterials, Reno, NV
23. Whittlesey, K.J., J. Jang, and **L.D. Shea**, "DNA releasing scaffolds for stimulating dorsal root ganglion neurite growth" 2003 Society For Biomaterials, Reno, NV.
24. **Shea, L.D.**, "Polymeric Systems for Non-Viral DNA Delivery", 11<sup>th</sup> Annual Spore Mtg, Baltimore, MD, July 2003.
25. P.K. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Collagen Type I Improves Survival and Stimulates Granulosa-Oocyte Complex Growth *In Vitro*." *Northwestern University Reproductive Mini-Symposium*. Evanston, IL. Oct. 2003. Constance Campbell Presentation Award Winner.
26. Segura, T., P. Chung, and **L.D. Shea**, "DNA Delivery From Hyaluronic Acid/Collagen Hydrogels", 2003 Annual AIChE meeting, San Francisco, CA
27. Yang, Y. and **L.D. Shea** "NGF-releasing Guidance Channels For Stimulating Neurite Outgrowth" "2003 Annual AIChE meeting, San Francisco, CA
28. Anderson, B.C., and **L.D. Shea**, "Design and Mechanistic Characterization of Surface-based Transgene Delivery Systems" 2003 Annual AIChE meeting, San Francisco, CA
29. Kreeger, P.K., C. B. Berkholtz, T. K. Woodruff, and **L.D. Shea**, "Alginate Matrices for the Culture of Immature Murine Ovarian Follicles" 2003 Annual AIChE meeting, San Francisco, CA
30. Jang, J.H., T. Segura, Z. Bengali, B. Anderson, **Shea, L.D.** Design of DNA releasing scaffolds for efficient delivery, Materials Research Society, December, 2003.
31. Bengali, Z. A. Pannier, T. Segura, B. Anderson, and LD Shea American Chemical Society, Anaheim California, March 2004
32. Kreeger, P.K., T.K. Woodruff, and **L.D. Shea**, "Alginate-Extracellular Matrix Gels to Promote Maturation of Ovarian Follicles" 2004 Annual AIChE meeting, Austin, TX, November 2004
33. Jang, J.H., C. Rives, **L.D. Shea**, "DNA releasing PLG scaffolds promote in vivo transgene expression and physiological responses", 2004 Annual AIChE meeting, Austin, TX, November 2004
34. Jang, J.H., Z. Bengali, K.J. Whittlesey, **L.D. Shea**, "Transfection by surface-bound PEI/DNA complexes for neurite growth", 2004 Annual AIChE meeting, Austin, TX, November 2004
35. Rives, C.B., W.L. Lowe, M. Baker, D. Kaufman, and **L.D. Shea** "Islet cell transplantation on protein-releasing scaffolds", 2004 Annual AIChE meeting, Austin, TX, November 2004
36. Pannier, A.K. Z. Bengali, B. Anderson, and **L.D. Shea** "Patterned Delivery of DNA Complexes from Self-Assembled Monolayers", 2004 Annual AIChE meeting, Austin, TX, November 2004
37. Yang, Y. De Laporte, L., and **L.D. Shea** "Controlled NGF release from single-lumen and multi-lumen conduits for nerve regeneration" Society for Biomaterials, Memphis, TN April 2005.
38. **Shea, L.D.** K.J. Whittlesey, J. H. Jang, T.L. Houchin, "Nerve conduits for efficient DNA delivery" 2005 BMES meeting, Baltimore Maryland, September 30, 2005
39. **Shea, L.D.**, J. H. Jang, C Rives, "DNA releasing scaffolds for tissue induction" 2005 BMES meeting, Baltimore Maryland, September 30, 2005.
40. West, ER, Kreeger, PK, Deck, JW, Woodruff, TK, **Shea, LD.** (2005) Alginate hydrogel mechanics regulate follicle growth in a three-dimensional *in vitro* culture system. *American Institute of Chemical Engineers (AIChE) Annual Meeting*. Cincinnati, OH.
41. West, ER, Kreeger, PK, Deck, JW, Woodruff, TK, **Shea, LD.** (2005) Alginate hydrogel mechanics regulate follicle growth in a three-dimensional *in vitro* culture system. *Center for Reproductive Science 26th Annual Minisymposium*. Evanston, IL.
42. Pannier, A.K. and **L.D. Shea** "Engineering Substrate-Mediated Gene Delivery with Self-Assembled Monolayers" 2005 Annual AIChE meeting, Cincinnati, OH, November 2005
43. Houchin, T.L. and **L.D. Shea** "Patterned Substrate-Mediated Gene Delivery using Microfluidics" 2005 Annual AIChE meeting, Cincinnati, OH, November 2005
44. Bengali, Z., and **L.D. Shea**. "Gene Delivery from a Coated Substrate." *Midwest Crossroads AGEP*, Indianapolis, IN, November 2005.
45. Wieland, J.A. and **L.D. Shea** "DNA Delivery in Hyaluronic Acid Hydrogels" The Society for Biomaterials, Pittsburgh, PA, March 2006

46. Bengali, Z., and **L.D. Shea**. "Extracellular Matrix Identity and Surface Density Alter Transfection by Complexes Delivered from a Cell-Adhesive Substrate." American Society for Gene Therapy, Baltimore, MD, June 2006.
47. Houchin, T.L. and **L.D. Shea** "Controllable Concentration Gradients by Spatially-Patterned Gene Delivery" 2006 Annual AIChE meeting, San Francisco, CA, November 2006
48. Pannier, AK, and **L.D. Shea**. Incorporation of polyethylene glycol into self-assembled monolayers enhances substrate-mediated gene delivery by non-specifically bound complexes. 2006 Annual AIChE meeting, San Francisco, CA, November 2006
49. Rives, C.B., Zhang, X., Hughes, E., Kaufman, D.B., Lowe, W.L., Stock, S.R. and **L.D. Shea**, "Gene Delivery from Polymer Scaffolds for Angiogenesis" 2006 Annual AIChE Meeting, San Francisco, CA, November 2006.
50. De Laporte L, Yang Y, Zelivyanskaya ML, Anderson AJ, **L.D. Shea**. DNA Loaded Multiple Channel Bridges for Spinal Cord Regeneration. American Institute of Chemical Engineers, Annual meeting (San Francisco, CA (USA)) November 2006
51. Yang Y, De Laporte L, Zelivyanskaya ML, Anderson AJ, **L.D. Shea** "Multiple Channel Bridges Releasing Bioactive Factors to Promote Spinal Cord Regeneration" 2006 Annual AIChE meeting, San Francisco, CA, November 2006
52. E.R. West, T.K. Woodruff, **L.D. Shea** "Engineering the alginate matrix regulates tissue development and growth of ovarian follicles" 2006 Annual AIChE meeting, San Francisco, CA, November 2006.
53. Rea, J.C., **L.D. Shea**, and A.E. Barron "Engineering Modular Protein Polymer Vectors for Gene Delivery" 2006 Annual AIChE meeting, San Francisco, CA, November 2006.
54. M.V. Barbolina, B. Adley, **L.D. Shea**, M.S. Stack. 'Modeling Microenvironmental Regulation of Metastasis-Associated Gene Expression in Three-Dimensional Collagen Cultures'. 2007 Centennial Meeting of the American Association for Cancer Research. April 14 ^ 18, 2007. Los Angeles, CA.
55. Salvay, D.M., Rives, C.B., Zhang, X., Chen, F., Kaufman, D.B., Lowe, W.L. and **Shea, L.D.** Extracellular matrix protein-coated scaffolds promote the reversal of diabetes following extrahepatic islet transplantation. *ENDO 07*. Toronto, Ontario, CANADA. June 2 - 5, 2007.
56. J.C. Rea, A.E. Barron, **L.D. Shea** "Surface-Mediated Delivery of Peptide-Lipoplexes" 2007 Annual AIChE Meeting, Salt Lake City, UT, November 2007.
57. T. Houchin-Ray, M. Zelivyanskaya, **L.D. Shea** "Controllable concentration gradients by patterns of gene expression for directed neurite extension" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
58. T. Houchin-Ray, L.A. Swift, J.H. Jang, **L.D. Shea** "Patterned PLG substrates for localized DNA delivery and directed neurite extension" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
59. A.D. Bellis, A.K. Pannier, **L.D. Shea** "Transfected Cell Arrays For The High-Throughput Analysis of Transcription Factor Activity" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
60. M.S. Weiss, M. Dimri, H. Band, V. Band, **L.D. Shea**, "Poly(Ethylene Glycol)-Based Hydrogels For Controlling The Interplay Between Mechanical And Chemical Cues In Three-Dimensional Culture Of Mammary Epithelial Cells" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
61. L. De Laporte, Y. Yang Y, K. Bhatia, A. Adler, A. Yan, **L.D. Shea** "Multiple Channel Bridges Tailored With Gene Therapy And Extracellular Matrix Components For Spinal Cord Regeneration" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
62. E.R. West, M.A. Gomberg, T.K. Woodruff, and **L.D. Shea**. "Alginate stiffness regulates gene expression and antral cavity development in an in vitro ovarian follicle culture system" 2007 Annual AIChE meeting, Salt Lake City, UT, November 2007.
63. Zelinski, M., M. Xu, E West, M Lawson, **L.D. Shea**, TK Woodruff, and RL Stouffer "An Alginate Matrix Supports the Three-dimensiona Architecture of the Nonhuman Primate Follicle and Permits Coordinated Development of Preantral Follicles to Small Antral Follicles in Vitro" 41st SSR Annual Meeting, May 27-30, 2008.



64. H.M. Tuinstra, A.C. Sebeson, and **L.D. Shea**. "Reduction of Chondroitin Sulfate Proteoglycans to Increase Axonal Outgrowth In a Neuronal Co-Culture Model" 2008 Annual AIChE meeting, Philadelphia, PA, November 2008.
65. A.D. Bellis and **L.D. Shea**. "Parallel Gene Delivery for Cell-based Activity Assays" 2008 Annual AIChE meeting, Philadelphia, PA, November 2008.
66. L. De Laporte, A. Yan, **L.D. Shea**. "Local Gene Delivery from Ecm Coated Poly (lactide co glycolide) Multiple Channel Bridges after Spinal Cord Injury" 2008 Annual AIChE meeting, Philadelphia, PA, November 2008.
67. J.A. Shepard and **L.D. Shea**. "Extracellular Matrix Composition Influence on Gene Delivery in Hydrogels" 2008 Annual AIChE meeting, Philadelphia, PA, November 2008.
68. G. Huang and **L.D. Shea** "Regeneration of human pulp-/dentin-like tissues in emptied root canal space" IADR/AAACR April 2009.
69. Cytron, J, **L.D. Shea**, and T.K. Woodruff, "Three Dimensional (3-D) In Vitro Follicle Culture System Of Secondary Follicles In Cycling Mice: Obesity And Cycle Stage May Impact Oocyte Quality" ASRM October 2009.
70. J.A. Shepard and **L.D. Shea**, "Three-Dimensionally Directed DRG Neurite Outgrowth within Hydrogels in a Co-Culture Model Using Gene Delivery" 2009 Annual AIChE meeting, Nashville, TN
71. M. Aviles and **L.D. Shea** "Contribution of Sustained Release to In Vivo Gene Expression" 2009 Annual AIChE meeting, Nashville, TN
72. H. Tuinstra and **L.D. Shea** "Lentiviral Delivery From Multiple Channel Bridges for Spinal Cord Regeneration" 2009 Annual AIChE meeting, Nashville, TN.
73. R. Boehler and **L.D. Shea** "Induced M2 Macrophage Activation by IL10 Plasmid Delivery From PLG Scaffolds" 2009 Annual AIChE meeting, Nashville, TN.
74. Woodruff, T.K. and **L.D. Shea** "Ovarian Rigidity Regulates Follicle Function and Egg Quality" SSR 2010.
75. RM Smith, A Shikanov, M Xu, TK Woodruff, and **LD Shea**. Synthetic proteolytically sensitive hydrogels for 3D *in vitro* ovarian follicle culture. Gordon Research Seminar on Signal Transduction from Engineered Extracellular Matrices, 2010. Biddeford, Maine.
76. Shikanov A, Smith RM, Woodruff TK, Shea LD, Synthetic proteolytically sensitive hydrogels for 3D ovarian follicle culture in vitro, *American Chemical Society* annual 239<sup>th</sup> meeting, San-Francisco, 2010.
77. M.S. Weiss, A. Shikanov, and **L.D. Shea** "Influence of adhesion on normal and cancerous mammary epithelial cells in three-dimensional culture using degradable synthetic hydrogels" 2010 TERMIS North America Conference, Orlando, FL.
78. M.O. Aviles and **L.D. Shea** "Lentiviral Gene Delivery From Hydrogel Filled PLG Scaffolds", 2010 Annual AIChE meeting, Salt Lake City, UT.
79. D. Tagler, R.M. Smith, C.M. Tingen, T.K. Woodruff, **L.D. Shea**. "Primary Ovarian Follicle Development Is Promoted within Alginate Hydrogels Via Co-Culture with Theca-Interstitial Cells and Mouse Embryonic Fibroblasts" 2010 Annual AIChE meeting, Salt Lake City, UT.
80. Duncan, F.D., J. Hornick, R. Schultz, M. Lampson, L.D. Shea, and TK Woodruff. "Chromosome Cohesion Decreases in human eggs with Advanced Maternal Age", SSR 2012. Penn State Univ.
81. Smarr, C., Yap, W.T., McCarthy, D., Bryce, P., Shea, L., Miller, S., "Tolerance induction using novel antigen-coupled carriers in a model of allergic asthma." 99<sup>th</sup> Annual Meeting of the American Association of Immunologists: Immunology 2012<sup>TM</sup>, Boston, MA, May 2012
82. Chen J, Sheu A, Li W, Omary R, Shea LD, Larson AC. PLGA microspheres for localized transcatheter delivery of sorafenib: development and preclinical feasibility studies. 37<sup>th</sup> Annual Scientific Meeting of Society of Interventional Radiology, San Francisco, USA, March 2012.
83. Chen J, Sheu A, Omary R, Shea LD, Larson AC. PLGA microspheres for image-guided transcatheter delivery of sorafenib to liver tumors. World Conference in Interventional Oncology 2012, Chicago, USA, June 2012.
84. Yap, W.T., McCarthy, D.P., Smarr, C.B., Harp, C.T., Hunter, Z., Miller, S.D., Shea, L.D.,

- "Nanoparticulate antigen carriers for the treatment of autoimmune diseases and allergies." Biomedical Engineering Society 2012 Annual Meeting, Atlanta, GA, October 2012
85. Yap, W.T., Salvay, D.M., Silliman, M.A., Zhang, X., Bannon, Z.G., Kaufman, D.B., Lowe Jr., W.L., Shea, L.D., "Extracellular matrix protein-coated scaffolds enhance islet survival and function." Biomedical Engineering Society 2012 Annual Meeting, Atlanta, GA, October 2012.
86. S.K. Seidlits, B.P. Bernabé, L.J. Broadbelt, L.D. Shea. A large-scale, real-time array to assess dynamic changes in intracellular signaling in response to biomaterial-mediated mechanical and adhesive stimuli. Oral presentation. Biomedical Engineering Society Annual Meeting, Atlanta, GA. Oct. 25, 2012.
87. S.K. Seidlits, A. Thomas, T. Kuskushliev, D. Hassani, A. Goodman, B. Cummings, A. Anderson, L.D. Shea. Lentiviral-mediated growth factor delivery from multichannel bridges for spinal cord injury repair. Oral presentation. Biomedical Engineering Society Annual Meeting, Atlanta, GA. Oct. 27, 2012.
88. S.K. Seidlits, L.D. Shea. Real-time array to examine transcription factor activity in response to mechanical stimuli. Poster presentation. Chicago Biomedical Consortium Annual Symposium, Chicago, IL. Oct. 11, 2011.
89. Gower, R.M., J. Graham, and L.D. Shea Gene Releasing Scaffolds for Local Immunomodulation and Enhanced Cell Transplant, Biomedical Engineering Society Annual Meeting, Atlanta, GA. Oct. 27, 2012.
90. Chen J, **Shea LD**, Larson AC. "Embolic Poly(Lactide-Co-Glycolide) Microspheres for Image-Guided, Transcatheter Delivery of Sorafenib to Hepatocellular Carcinoma". American Institute of Chemical Engineers Annual Meeting 2013, San Francisco, USA, November 2013.
91. Chen J, Lewandowski RJ, Omary RA, **Shea LD**, Larson AC. "Biodistribution of Poly(Lactide-Co-Glycolide) Sorafenib Eluting Microspheres in Rodent HCC Model". World Conference in Interventional Oncology 2013, New York, USA, May 2013.
92. SM Azarin, RM Gower, BA Aguado, J Yi, JS Jeruss, V Backman, and **LD Shea**. "Development of an in vivo metastasis sensor using biomaterial scaffolds." American Institute of Chemical Engineers (AIChE) Annual Meeting. Oral Presentation, San Francisco, CA. November 2013.
93. SM Azarin, RM Gower, BA Aguado, J Yi, JS Jeruss, V Backman, and **LD Shea**. "Biomaterial scaffolds for early detection of breast cancer metastasis." Biomedical Engineering Society (BMES), Seattle, WA. September 2013.
94. Hlavaty, K.A., Bryant, J., Wang, S., Yap, W.T., Luo, X., and L.D. Shea. "Nanoparticle-induced tolerance in fully MHC-mismatched allogeneic islet transplantation." Federation of Clinical Immunology Societies (FOCiS) Annual Meeting. Boston, MA. Oral Presentation, June 2013.
95. C.T. Harp, W.T. Yap, Z. Hunter, L.D. Shea, S.D. Miller. "Mechanisms of antigen-coupled microparticle tolerance induction in antigen presenting cells." Federation of Clinical Immunology Societies. Oral Presentation, Boston, MA. June 2013
96. S.D. Miller, D.R. Getts, A.J. Martin, D.P. McCarthy, R.L. Terry, Z.N. Hunter, W.T. Yap, M.T. Getts, M. Pleiss, X. Luo, N.J.C. King, L.D. Shea. "Induction of tolerance for therapy of autoimmune diseases using antigen-linked biodegradable PLG nanoparticles – Mechanisms and clinical prospects." TechConnect World Summit & Innovation Showcase 2013. Oral Presentation, Washington, DC. May 2013
97. McCarthy, D.P., Yap, W.T., Hlavaty, K., Hunter, Z., Harp, C.T., Shea, L.D., Miller, S.D., "Antigen-coupled microparticles induce tolerance in experimental models of autoimmunity and transplantation." Federation of Clinical Immunology Societies, Boston, MA. Poster Presentation, June 2013.
98. W.T. Yap, D.P. McCarthy, Z. Hunter, C.T. Harp, S.D. Miller, L.D., Shea. "Poly(lactide-co-glycolide)-based antigen carriers for the induction of antigen-specific immunological tolerance." Chicago Biomedical Consortium 4<sup>th</sup> Annual Scientific Exchange. Oral Presentation, Chicago, IL. April 2013.
99. W.T. Yap, D.P. McCarthy, Z. Hunter, C.T. Harp, S.D. Miller, L.D. Shea. "Poly(lactide-co-glycolide)-based antigen carriers for the induction of antigen-specific immunological tolerance." Materials

- Research Society Spring Meeting. Oral Presentation, San Francisco, CA. April 2013
100. W.T. Yap, C.B. Smarr, S.D. Miller, L.D. Shea. "Immunological tolerance induction for the treatment allergic asthma using biodegradable antigen-delivery systems." Materials Research Society Spring Meeting. Oral Presentation, San Francisco, CA. April 2013.
  101. Gower RM, Azarin SM, Ricci CF, Zhang X, Shea LD. Gene-Releasing Scaffolds for Immunomodulation. Biomedical Engineering Society (BMES) Annual Meeting. Oral Presentation, Seattle WA. September 2013.
  102. Gower RM, Azarin SM, Ricci CF, Zhang X, Shea LD. Biomaterial Scaffolds for Local Immunomodulation. American Institute of Chemical Engineers Annual Meeting. Oral Presentation, San Francisco CA. November 2013.
  103. Peñalver Bernabé B, Weiss MS, Shin S, Dubbery SJ, Mui M, Broadbelt LJ, Jeruss JS, Shea LD. "Systems biology approach for the analysis of the cellular dynamics of ErbB2 signaling in 3D during tissue morphogenesis using transduced cell arrays" AICHE (November 2013) Oral presentation
  104. Peñalver Bernabé B\*, Seidlits S\*, Broadbelt LD, Shea LD "A large-scale, real-time array to assess dynamic changes in intracellular signaling in response to biomaterial-mediated mechanical and adhesive stimuli" AICHE, San Francisco, CA, USA (November 2013) Oral presentation
  105. Peñalver Bernabé B, Weiss MS, Shin S, Dubbery SJ, Mui M, Broadbelt LJ, Jeruss JS, Shea LD. "Systems biology approach for the analysis of the cellular dynamics of ErbB2 signaling in 3D during tissue morphogenesis using transduced cell arrays" RECOMB, Toronto, Canada (November 2013) Oral presentation
  106. WM Miller, M Duncan, J Wu, S Shin, N Bagheri, LD Shea. Dynamic Transcription Factor Activity Profiles and Inferred Networks Reveal Key Regulatory Interactions during Megakaryocytic and Erythroid Differentiation of Bipotent Progenitor Cells. ECI Scale-up & Manufacturing of Cell Therapies. 2014
  107. Jen, M., LD Shea, GA Ameer, "Modulating The Vascular Healing Response Via Sirt1 Transgene Delivery", ATVB

### **Poster presentations**

1. **L.D. Shea**, K. Bouhadir, D.J. Mooney, poster "Alginate Inspired Hydrogels", Keystone Symposia on Tissue Engineering, Copper Mountain, CO., January 1998.
2. Whittlesey, K.J. and **L.D. Shea** "Gene Releasing Polymers for Guided Nerve Regeneration", Gordon Conference on Biomaterials: Biocompatibility and Tissue Engineering, Plymouth, NH July, 2001
3. Whittlesey K.J. and **L.D. Shea** "A Novel DNA-Releasing Polymeric Guidance Channel for Nerve Regeneration." Society for the Advancement of Chicanos and Native Americans in Science Annual Meeting. Phoenix, AZ. September 27-30, 2001.
4. P.K. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Synthetic Scaffolds to Regulate Granulosa Cell Adhesion and Spreading." *Northwestern University Reproductive Mini-Symposium*. Evanston, IL. Oct. 2001. Constance Campbell Poster Presentation Award Winner.
5. Whittlesey K.J. and **L.D. Shea**. "A Novel Three-Dimensional Cell Culture Scaffold and Gene Delivery Vehicle." American Society for Cell Biology Annual Meeting. Washington, D.C. December 10-15, 2001.
6. Kreeger, P.K, T.K. Woodruff, and **L.D. Shea**. "Synthetic Scaffolds to Regulate Granulosa Cell Adhesion and Spreading", Northwestern University Center for Reproductive Science Research Minisymposium, Evanston, IL October 2001. Award Winner
7. **Shea, L.D.**, T. Segura, KJ Whittlesey, and P. Kreeger "Scaffolds for *in vitro* culture of granulosa cell/oocyte complexes and neurite extension", Gordon Conference on Signal Transduction by Synthetic Extracellular Matrices. New London, CT, June 23-27, 2002
8. Whittlesey KJ and LD Shea. "A Biodegradable Polymeric Gene Delivery System for Neural Tissue Engineering." Gordon Research Conference on Neural Development. Newport, RI. August 18-23, 2002.

9. C.B. Berkholtz, P.K. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Follicle Size Increases in a Synthetic Stroma." *Northwestern University Reproductive Mini-Symposium*. Evanston, IL. Oct. 2002.
10. Kreeger, P.K., TK Woodruff, and **L.D. Shea**, "Alginate Matrices To Regulate Granulosa Cell Morphology And Steroid Production ", 2nd Joint EMBS-BMES Conference, Houston, TX 2002.
11. Whittlesey, KJ and LD Shea, "Overexpression Of Neurotrophins By Gene Delivery From A Biodegradable Polymer Scaffold" Gordon Conference on Neurotrophic Factors, June 8-13, 2003.
12. Kreeger, P.K., C.B. Berkholtz, T.K. Woodruff, and **L.D. Shea** " In vitro maturation of granulosa-oocyte complexes in synthetic scaffolds", 2003 Society for the Study of Reproduction, Cincinnati OH
13. Segura, T., and **L.D. Shea** "Gene Delivery by Tethered Complexes to Polystyrene and Hyaluronic Acid/Collagen Films" 2004 Annual AIChE meeting, San Francisco, CA
14. Jang, J. and **L.D. Shea** "Cellular Transfection and Viability: Impact of DNA Dose and Release Rate From Polymeric Systems" 2004 Annual AIChE meeting, San Francisco, CA
15. **Shea, L.D.**, "Controlled plasmid delivery from tissue engineering scaffolds", The Whitaker Foundation, August, 2003.
16. Whittlesey, K.J. and **L.D. Shea** "Polymeric DNA delivery for in vitro and in vivo neurotrophin expression" Society for Neuroscience, New Orleans, LA November 2003.
17. P.K. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Three-Dimensional Culture of Murine Follicles in Vitro: Extracellular Matrix Effects." *Gordon Research Conference: Reproductive Tract Physiology*, New London, CT. June 2004. Gramm Award.
18. Houchin, Gordon Conference, June 2004.
19. P.K. Kreeger, T.K. Woodruff, and **L.D. Shea**. "Reconstructed Basement Membrane and Gonadotrophin Regulation of Murine Follicle Maturation in a Three-Dimensional Culture System." *Serono Ovarian Workshop*. Vancouver, Canada. July 2004.
20. P.K. Kreeger, J. Deck, T.K. Woodruff, and **L.D. Shea**. "Reconstructed Basement Membrane Regulation of Murine Follicle Maturation in a Three-Dimensional Culture System." *Society for the Study of Reproduction*. Vancouver, Canada. August 2004. USDA Merit Award.
21. P.K. Kreeger, C.B. Berkholtz, N.N. Fernandes, T.K. Woodruff, and **L.D. Shea**,. "Gonadotrophin Supplementation Enhances Development for Murine Preantral Follicles Cultured in a Three-Dimensional System." *Society for the Study of Reproduction*. Vancouver, Canada. August 2004.
22. Berkholtz, C.B., T.K. Woodruff, and **L.D. Shea** "NGF enhances survival in 3D primary follicle cultures in vitro." *Society for the Study of Reproduction*. Vancouver, Canada. August 2004
23. Kreeger, P.K., "Alginate Scaffolds for the Culture of Ovarian Follicles in a Stage Specific Manner" 2004 Annual AIChE meeting, Austin, TX, November 2004, Meet the Faculty Candidates
24. Whittlesey, K.J., C. Rives, L. De Laporte, and **L.D. Shea**, "Degradable Multilumen Scaffolds To Potentiate Regeneration By Gene Delivery" Society for Neuroscience, November 2004.
25. Kreeger, P.K., N.N. Fernandes, T.K. Woodruff, and **L.D. Shea**, Extracellular Matrix Regulation of Follicle Development in an *In Vitro* Culture System, April 2005 ESHRE conference, Belgium
26. Berkholtz, C.B., T.K. Woodruff, and **L.D. Shea**. "Differential effects of FSH and forskolin on primary murine follicles in a three-dimensional *in vitro* culture." *NIH Specialized Cooperative Centers Program in Reproductive Research (SCCPRR) Meeting*. Chicago, IL.
27. Berkholtz, C.B., T.K. Woodruff, and **L.D. Shea**. 2005. "Differential effects of FSH and forskolin on primary murine follicles in a three-dimensional *in vitro* culture." *Society for the Study of Reproduction*. Quebec, Canada
28. Berkholtz, C.B. T.K. Woodruff, and **L.D. Shea**. 2005. "Differential effects of FSH and forskolin on primary murine follicles in a three-dimensional *in vitro* culture." *Northwestern 26th Annual Minisymposium on Reproductive Biology*. Evanston, IL. Constance Campbell Memorial Research Poster Award 3rd Place
29. West, ER, Kreeger, PK, Fernandes, NN, Deck, JW, Woodruff, TK, **L.D. Shea**. (2005) Hydrogel Mechanics and Extracellular Matrix Regulation of Follicle Development in an *In Vitro* Culture System. *NIH Specialized Cooperative Centers Program in Reproductive Research (SCCPRR) Meeting*. Chicago, IL.

30. West, ER, Kreeger, PK, Deck, JW, Woodruff, TK, **L.D. Shea**. (2004) Regulation of follicle growth in a three-dimensional alginate culture by hydrogel mechanics. *Center for Reproductive Science 25th Annual Minisymposium*. Evanston, IL.
31. **Shea LD**, Anderson AJ, Whittlesey K, Jang J-H, Yang Y, Rives C, Houchin T, De Laporte L. DNA and protein releasing, multiple channel bridges for spinal cord repair. Christopher Reeve Paralysis Foundation: Second Annual Symposium on Spinal Cord Injury (Boston, MA (USA)) September 16-18, 2005.
33. **Shea LD**, Anderson AJ, Whittlesey K, Jang J-H, Yang Y, Rives C, Houchin T, De Laporte L. DNA and protein releasing, multiple channel bridges for spinal cord repair. Christopher Reeve Paralysis Foundation: Second Annual Symposium on Spinal Cord Injury (Boston, MA (USA)) September 16-18, 2005.
34. Bristol-Gould SK, Kreeger PK, Hutten CG, Kilen SM, Cook RW, Kipp JL, **Shea LD**, Mayo KE, Woodruff TK. "Postnatal Regulation of Germ Cells by Activin" 2005 Center for Reproductive Sciences" 26<sup>th</sup> Minisymposium-Northwestern University, October 2005.
35. Yang Y, De Laporte L, Iskandar BJ, Anderson AJ, **Shea LD** "Conduits with Single or Multiple Channels for Localized Delivery of Neurotrophins and DNA" 2005 Society for Neuroscience meeting, Washington, DC, November 2005
36. Bristol-Gould SK, Kreeger PK, Hutten CG, Kilen SM, Cook RW, Kipp JL, **Shea LD**, Mayo KE, Woodruff TK. "Postnatal Regulation of Germ Cells by Activin: Establishment of an Optimal and Necessary Quantity of Follicles Prior to Puberty" 2006 Endocrine Society Meeting-Boston, MA June 2006
37. Kreeger PK, Bristol-Gould SK, Selkirk CG, Kilen SM, Mayo KE, **Shea LD**, and Woodruff TK, "The Fate of the Initial Follicle Pool: Mathematical Modeling Demonstrates its Sufficiency for Adult Fertility" 2006 Endocrine Society Meeting-Boston, MA June 2006
38. M. Xu, P.K Kreeger, **L.D. Shea**, and T.K Woodruff "Tissue Engineered Follicles Produce Live, Fertile Offspring" Endocrine Society 88<sup>th</sup> Annual Meeting
39. Houchin, T.L. and **L.D. Shea** " Patterned Substrate-Mediated DNA Delivery using Soft Lithography for Neural Tissue Engineering" 2006 Annual ASGT meeting, Baltimore, MD, June 2006
40. Pannier AK, Bengali Z, Ariazi EA, Jordan VC, **L.D. Shea**. Transfected cell arrays for assessment of estrogen receptor activation in breast cancer cells. *American Society of Gene Therapy*, Baltimore, MD. 2006
41. Yang Y, De Laporte L, Zelivyanskaya ML, Anderson AJ, **Shea LD** "Multiple Channel Bridges Releasing Bioactive Factors and DNA to Promote Spinal Cord Regeneration" 2006 Society for Neuroscience meeting, Atlanta, GA, October 2006
42. M. Zelivyanskaya, T. L. Houchin, **L. D. Shea**, "Transfection profile affects the extent of primary neurite outgrowth" Society for Neuroscience, Atlanta, GA, 2006, Oct. 14-18
43. Huang, G.T.-J., D. Ego-Osuala, S.-H. Park, **L.D. Shea**, and R.Tuan "Pulp Stem Cells Grown in Scaffolds and on Dentin" IADR Conference, New Orleans 2007.
44. Salvay, D.M., Rives, C.B., Zhang, X., Chen, F., Kaufman, D.B., Lowe, W.L. and **Shea, L.D.** Microporous scaffolds used as vehicles for islet transplantation and gene delivery. *5th Annual Gene Therapy Symposium for Heart, Lung and Blood Diseases*. Sonoma, CA. Nov. 1 - Nov. 3, 2006.
45. M. Zelivyanskaya, T. Houchin-Ray, **L.D. Shea**, "Controllable nerve growth factor concentration gradients for directed neurite extension" Neuroscience 2007, San Diego, CA, November 2007.
46. M. Zelinski, M. Xu, M. Lawson, **L.D. Shea**, T.K. Woodruff, R.L. Stouffer, "An Alginate Matrix Supports the Three-dimensional Architecture of the Nonhuman Primate Follicle and Permits Coordinated Development of Preantral Follicles to Small Antral Follicles in Vitro", SSR, 2008.
47. Jin S. **L.D. Shea**, and T.K. Woodruff. "Optimization Of A Two-Step In Vitro Culture System For Follicle Growth And Oocyte Development" ASRM
48. M.V. Barbolina, B.P. Adley, J. Shepard, A. Belmadani, R. Miller, **L.D. Shea**, M.S.Stack. The Role of Chemokine Receptor 4 in Ovarian Carcinoma Metastasis. 2008 Annual Meeting of the American Association for Cancer Research. San Diego, CA, April 2008.



49. des Rieux, A., L. De Laporte, H. Tuinstra, M. Zelivyanskaya, V. Preat, P. Carmeliet, **L.D. Shea** "VEGF-releasing scaffolds for spinal cord regeneration application", Controlled Rel Soc, New York July 2008
50. des Rieux, A. A. Shikanov, and **L.D. Shea**, "Fibrin hydrogels as non-viral vector delivery systems for tissue engineering applications", Controlled Rel Soc, New York July 2008
51. Jin, S., L. Lei, **L.D. Shea**, and T.K. Woodruff, "In Vitro Growth of Human Primordial Follicles" SSR, July 2009.
52. Hirshfield-Cytron, J., **L.D. Shea**, and T.K. Woodruff, "Mouse Model Of Metabolic Syndrome Reveals A Negative Effect On Oocyte Quality And Quantity" ENDO Soc. meeting 2010.
53. Xu, M., A. Shikanov, S. Kieswetter, J. Jozefik, **L.D. Shea**, and T.K. Woodruff, "In vitro oocyte maturation and preantral follicle growth from luteal phase baboon ovary produce mature and fertilizable eggs", SSR 2010.
54. Barrett, S., R. Ahn, M. Raja, J. Jozefik, L. Spaho, H. Chen, M. Bally, M. Avram, L. Gordon, **L.D. Shea**, T.V. O'Halloran, T. Woodruff "In Vitro Risk Assessment of a Nanoparticulate Formulation of Arsenic Trioxide in Isolated Ovarian Follicles is Representative of Effects In Vivo", SSR 2010
55. M.O. Aviles and **L.D. Shea** "Induced In Vivo Gene Delivery from Modified PLG Scaffolds", 2010 ASGCT Annual meeting, Washington D.C.
56. R. Gibly, M.L. Graham, B.J. Hering and **L.D. Shea** "Microporous Polymer Scaffolds for Islet Transplantation" May, 2010. Annual ASGCT Meeting, Washington D.C.
57. J. Graham and **L.D. Shea** " Layered scaffolds for islet transplantation and gene delivery" 2010 ASGCT meeting, Washington, DC.
58. Beatriz Peñalver Bernabé, Eugene Galdones, Lei Lei, Linda J Broadbelt, Lonnie D Shea, Teresa K Woodruff. A genome-wide analysis of gene expression during in vitro follicle development. At Minisymposium on Reproductive Biology October 2009
59. Beatriz Peñalver Bernabé, Eugene Galdones, Lei Lei, Sarah Kiesewetter, Jen Jozefik, Erin Jackson, Linda J Broadbelt, Teresa K Woodruff and Lonnie D Shea, Identification of developmental markers and targets to enhance in vitro ovarian follicle culture. At Oncofertility Consortium, October 2010
60. M.O. Aviles and **L.D. Shea** "Design of magnetic collagen gels and their effect in cell behavior", 2010 International Conference on the Scientific and Clinical Applications of Magnetic Carriers, Rostock, Germany.
61. M.O. Aviles and **L.D. Shea** "Fundamentals of Gene Delivery From Tissue Engineering Scaffolds", 2010 Annual AIChE meeting, Salt Lake City, UT.
62. M.S. Weiss, B. Peñalver Bernabé, A.D. Bellis, L.J. Broadbelt, J.S. Jeruss, and **L.D. Shea** "Dynamic, large-scale profiling of transcription factor activity from live cells in 3D culture" 2010, TERMIS North America Conference, Orlando, FL.
63. RM Smith, A Shikanov, M Xu, TK Woodruff, and **LD Shea**. Synthetic proteolytically sensitive hydrogels for 3D *in vitro* ovarian follicle culture. Gordon Conference on Signal Transduction from Engineered Extracellular Matrices, 2010. Biddeford, Maine.
64. Shikanov A, Woodruff TK, **Shea LD**, Fibrin encapsulation and VEGF delivery promote ovarian graft survival in mice, *Gordon Research Conference*, Signal Transduction By Engineered Extracellular Matrices, 2010.
65. RM Smith, A Shikanov, M Xu, TK Woodruff, and **LD Shea**. Synthetic proteolytically sensitive hydrogels for 3D *in vitro* ovarian follicle culture. Oncofertility Consortium Conference, 2010. Chicago, IL.
66. R. Gibly, J. Graham, M.L. Graham, B.J. Hering and **L.D. Shea** "Microporous Polymer Scaffolds for Islet Transplantation" Dec, 2010. Annual TERMIS-NA Meeting, Orlando, FL.
67. D. Tagler, R.M. Smith, C.M. Tinggen, T.K. Woodruff, **L.D. Shea**. "Primary Follicle Development is Promoted via Co-Culture with Theca-Interstitial Cells and Mouse Embryonic Fibroblasts" 2010 Oncofertility Consortium Conference, Chicago, IL.
68. J. Graham, R. Boehler, M. Aviles, S. Shin and **L.D. Shea** "PLG scaffolds for controlled plasmid and

- virus delivery for sustained gene expression" 2010 AGSTHLBD meeting, Sonoma, CA.
69. J. Shepard and L.D. Shea "Hydrogels that retain gene therapy vectors can enhance gene delivery leading to increased neurite outgrowth" 2010 TERMIS meeting, Orlando, FL.
  70. J. Shepard and L.D. Shea "Gene Delivery from Hydrogels for Applications in Regenerative Medicine" 2010 Southeast Biomedical Engineering Career Conference, Clemson, SC.
  71. R. Boehler and L.D. Shea "Induced M2 Macrophage Activation by IL10 Virus Delivery" 2010 Annual AIChE meeting, Salt Lake City, UT.
  72. H. Tuinstra, M. Aviles, S. Shin and L.D. Shea "Localized lentivirus delivery of BDNF and NT3 from multiple channel bridges enhances axon regeneration in a rat hemisection spinal cord injury model" 2010 TERMIS-NA Annual Conference, Orlando, FL.
  73. P. Mutharasan, E. Galdones, B Peñalver Bernabé, Obed Garcia, Richard S Legro, A. Dunaif, LD Shea, TK Woodruff, M Urbanek, "Genes Regulated by Ovarian Rigidity are Associated with PCOS", Endocrine Society 2011
  74. Gibly, R.F., and L.D. Shea, "Islet Transplantation on Biodegradable Polymer Scaffolds for Type-1 Diabetes in Syngeneic and Xenogeneic Murine Models" Endocrine Soc 2011.
  75. Galdones, E. B. Peñalver Bernabé, RM Skory, D Mackovic, LJ Broadbelt, LD Shea, and TK Woodruff, "Ovarian Expression of Cartilage Oligomeric Matrix Protein as a Potential Biomarker of Antral Follicle Development in the Mouse", SSR, Portland Oregon, July 2011.
  76. Xu, M., E Jackson, LD Shea, and TK Woodruff, Proliferation and differentiation of theca-like cells from granulosa cells during in vitro follicle culture, SSR, Portland Oregon, July 2011.
  77. E. Tarasewicz, MO Aviles, LD Shea, and JS Jeruss, "Analysis of transcription factor activation by the embryonic microenvironment in metastatic breast cancer cells". AACR 2012
  78. Z. Hunter, J.W.T. Yap, C. Harp, D. McCarthy, L.D. Shea, and S.D. Miller, "Induction Of Immune Tolerance Using Myelin-Antigen Coupled Nanoparticles For Therapeutic And Preventative Treatment Of Eae", 8<sup>th</sup> International Congress on Autoimmunity, Granada, Spain, May 2012.
  79. Smarr, C., Yap, W.T., McCarthy, D., Bryce, P., Shea, L., Miller, S., "Tolerance induction using novel antigen-coupled carriers in a model of allergic asthma." 99<sup>th</sup> Annual Meeting of the American Association of Immunologists: Immunology 2012<sup>TM</sup>, Boston, MA, May 2012
  80. Yap, W.T., McCarthy, D.P., Smarr, C.B., Harp, C.T., Hunter, Z., Miller, S.D., Shea, L.D., "Engineering multi-functional antigen carriers for the treatment of autoimmune diseases and allergies." The Society for Biological Engineering of the American Institute of Chemical Engineers 6<sup>th</sup> International Conference on Bioengineering and Nanotechnology, Berkeley, CA, June 2012
  81. Yap, W.T., Salvay, D.M., Silliman, M.A., Zhang, X., Bannon, Z.G., Kaufman, D.B., Lowe Jr., W.L., Shea, L.D., "Enhanced islet survival and function on extracellular matrix protein-coated scaffolds." The Society for Biological Engineering of the American Institute of Chemical Engineers 6<sup>th</sup> International Conference on Bioengineering and Nanotechnology, Berkeley, CA, June 2012.
  82. Stephanie K. Seidlits, Beatriz P. Bernabé, Linda J. Broadbelt and Lonnie D. Shea. "A large-scale, real-time transcription factor activity array to examine cell signaling from mechanical and adhesive stimuli", Gordon Conference on Signal Transduction by Engineered Extracellular Matrices.
  83. Tagler D, Makanji Y, Woodruff TK, and Shea LD. Defined medium conditions for the culture of primary ovarian follicles within alginate hydrogels. Oncofertility Consortium Conference 2012. Chicago, IL.
  84. Makanji Y, Tagler D, Pahnke J, Shea LD, and Woodruff TK. Enhanced survival of mouse ovarian follicles cultured in low oxygen tension. Oncofertility Consortium Conference 2012. Chicago, IL.
  85. Tagler D, Tu T, Smith RM, Anderson NR, Woodruff TK, and Shea LD. Embryonic fibroblasts enable the culture of ovarian follicles in alginate hydrogels. American Institute of Chemical Engineers (AIChE) Chicago Section, April Meeting 2012. Evanston, IL.
  86. TND Pham, S Asztalos, MS Weiss, LD Shea, DA Tonetti, "Overexpression of protein kinase C alpha differentially activates transcription factors in T47D breast cancer cells in the presence of 17 $\beta$ -estradiol both in the 2D and 3D environments." San Antonio Breast Cancer Conference

87. Weiss MS, Peñalver Bernabé B, Shin S, Bluver DA, Broadbelt LJ, Jeruss JS & Shea LD. Analysis of ErbB2 signaling in 3D during tissue morphogenesis and therapeutic treatment using transduced cell arrays”, *Systems Biology*.
88. Kniazeva, E. (2012, Apr.) “Large Scale Isolation of Primordial Follicles for Transplantation within Biomaterial Grafts in a Mouse Infertility Model.” 32nd Annual Minisymposium on Reproductive Biology, Chicago, IL.
89. Kniazeva, E. (2012, Oct.) "Transcription factor networks in invasion-promoting breast carcinoma-associated fibroblasts." *Cell Symposia: Hallmarks of Cancer*, San Francisco, CA.
90. K. Hlavaty, R. Gibly, X. Zhang, W. Lowe, X. Luo, L. Shea. “Enhancing Human Islet Transplantation using Protein Functionalized PLG Scaffolds.” *Biomedical Engineering Society (BMES) Annual Meeting*. Poster Presentation, Atlanta, GA. October 2012.
91. Zoe Hunter, Woon-Tek Yap, Derrick McCarthy, Lonnie D Shea and Stephen D Miller. “Myelin Antigen-Coupled Nanoparticles Induce Tolerance in EAE”, *Keystone Symposia on Molecular and Cellular Biology, Multiple Sclerosis (A1)*. Oral Presentation, Big Sky, MT. January 2013.
92. Chen J, Sheu AY, Lewandowski RJ, Omary RA, **Shea LD**, Larson AC. "Transcatheter Delivery of Sorafenib-Eluting Poly(lactide-co-glycolide) Microspheres: Therapy Response Studies in a Rat Model of Hepatocellular Carcinoma". 38<sup>th</sup> Annual Scientific Meeting of Society of Interventional Radiology, New Orleans, USA, April 2013.
93. S.K. Seidlits, B.P. Bernabé, L.J. Broadbelt, L.D. Shea. A large-scale, real-time array to assess dynamic changes in intracellular signaling in response to biomaterial-mediated mechanical and adhesive stimuli. Poster Presentation. *Materials Research Society Spring Meeting*, San Francisco, CA. April 2013.
94. B. Aguado, S. Azarin, R. Gower, J. Jeruss, and L. Shea. “Investigating the Homing and Colonization of Metastatic Cancer Cells using a Transcription Factor Cell Array and Biomaterials.” *Gordon Research Conference - Biomaterials and Tissue Engineering*. Poster Presentation, Holderness, NH. July 2013.
95. B. Aguado, S. Azarin, R. Gower, J. Jeruss, and L. Shea. “Immune Cell Mediated Transcription Factor Activity in Metastatic Breast Cancer Cells.” *Biomedical Engineering Society (BMES) Annual Meeting*. Poster Presentation, Seattle, WA. September 2013.
96. Ekaterina Kniazeva, Ashley N. Hardy, Teresa K. Woodruff, Jacqueline S. Jeruss, Lonnie D. Shea. "Large Scale Isolation and Transplantation of Primordial Follicles within Biomaterial Grafts." *Specialized Cooperative Centers Program in Reproduction and Infertility Research (SCCPIR) Meeting*. Poster Presentation, Bethesda, MD. May 2013.
97. SM Azarin, RM Gower, BA Aguado, JS Jeruss, and **LD Shea**. "Biomaterial scaffolds to engineer a pre-metastatic niche." Poster Presentation, San Diego, CA. January 2013.
98. S.B. Giordano, S. Rao, R. Hamdan, L. D. Shea, J. S. Jeruss, K. Bethke, N.M. Hansen, S. Khan, J. H. Von Roenn, S. T. Rosen, W. J. Gradishar, S. Jain, K. P. Siziopikou, C. Meservey, V. G. Kaklamani. “Phase II neoadjuvant trial with carboplatin and eribulin mesylate in patients with triple negative breast cancer,” *American Association for Cancer Research (AACR) Special Conference on Advances in Breast Cancer Research: Genetics, Biology, and Clinical Applications*, San Diego, CA, (October 2013).
99. S.K. Seidlits, D.J. Margul, R.M. Boehler, A.G. Goodman, T. He, T.V. Kuskushliev, D. Smith, H.M. Tuinstra, B.J. Cummings, A.J. Anderson, L.D. Shea. Development of a combinatorial, biomaterial-mediated gene therapy for spinal cord regeneration. Oral presentation. *Biomedical Engineering Society Annual Meeting*, Seattle, WA. September 2013.
100. J. Bryant, T. Kheradmand, K. Hlavaty, S. Wang, L. Shea, X. Luo. “Microparticles based on pre-emptive donor antigen delivery for tolerance induction in islet cell transplantation,” 12<sup>th</sup> Joint Annual Meeting of the American Society of Transplant Surgeons and the American Society of Transplantation. Poster Presentation, Boston, MA. June 2012.
101. R. Kuo, R. Boehler, L. Shea. "Macrophage transition to an anti-inflammatory phenotype involves blocking NF-κB activity" *Autumn Immunology Conference*. Poster Presentation, Chicago, IL.

November 2013.

102. Peñalver Bernabé B, Galdones H, Siletz A, Woodruff TK, Broadbelt LJ, Shea LD “Systems ovarian folliculogenesis” Oncofertility Consortium Conference. Chicago, IL, USA (September 2013).
103. Engineering the Ovarian Cycle Using in Vitro Follicle Culture ~ a New Tool for Preclinical Reproductive Research, ICE/ENDO 2014.
104. Jeff Liu, Robert Gower, Jesse Zhang, Fallon Noto, Lonnie D. Shea. “Modulation of immune cells infiltration through biomaterial scaffold-mediated factor release for extra hepatic islet transplantation” Autumn Immunology Conference, Chicago, IL. November 2014.
105. Ekaterina Kniazeva, Lonnie D. Shea. “Design of biomaterial grafts to support transplantation of isolated primordial follicles that produce live births in a mouse infertility model” 10<sup>th</sup> World Biomaterial Congress, Montreal, Canada. May 2016.

## **E. STUDENTS SUPERVISED**

### **POST-DOCTORAL FELLOWS**

1. Brian Anderson (PhD at Iowa State, now at Abbott) (2003-2004)
2. Julie Wieland (PhD at UIUC) (2005-2007)
3. Anne des Rieux (PhD in Belgium, 2006-7), now on faculty in Belgium
4. Maria Barbolina (2007 – 2008) now faculty at UIC
5. Ariella Shikanov (PhD in Hebrew University, Jerusalem) (2007 - 2011), faculty Univ. of Michigan
6. Seungjin Shin (2007 – 2014)
7. Tao Tu (2008 – 2011)
8. Misael Aviles (2008 – 2011) (P&G)
9. Stephanie Seidlits (2010 – 2014), faculty at UCLA
10. Michael Gower (2011 – 2014), faculty at South Carolina
11. Juan Jose Sanchez Cortez (2011 – 2013)
12. Ekaterina Kniazeva (2011 – present)
13. Samira Azarin (2012 – present), faculty at University of Minnesota
14. Fallon Noto (2012 – present)
15. Shreyas Rao (2012 – present)
16. Eiji Saito (2013 – present)
17. Dylan McCreedy (2013 – present)
18. Ryan Pearson (2014 – present)
19. Courtney Dumont (2015-present)
20. Jonghyuck Park (2015 – present)
21. Tadas Kasputis (2015 – present)
22. Rachel Dudek (2015 – present)
23. Robert Oakes (2015 – present)
24. Briana Dye (2016 – present)

### **DOCTORAL STUDENTS**

1. Tatiana Segura (PhD May 2004, Chemical Engineering) (UCLA faculty)
2. Kevin Whittlesey (PhD program, IBiS, August 2005) (CIRM)
3. Pamela Kreeger (PhD program, ChBE, June 2005) (w/ T. K. Woodruff) (Wisconsin faculty)
4. Jae Hyung Jang (PhD program, ChBE, June 2005) (Yonsei University)
5. Yang Yang (PhD program, ChBE June 2007) (Genzyme)
6. Courtney Berkholtz (PhD program, IBiS, Dec. 2006) (w. T. K. Woodruff) (Consulting)
7. Zain Bengali (PhD program, IBiS, Dec. 2006) (NIH postdoc) (Biotech)
8. Chris Rives (PhD program, ChBE) (w. W.L. Lowe) (Shire)
9. Angela Pannier (PhD program, IBiS, June 2007) (Nebraska faculty)
10. Erin West (PhD program, ChBE, June 2008) (w/ T.K. Woodruff) (Abbott)

11. Tiffany Houchin (PhD program, ChBE, June 2008) (Eli Lilly)
12. Jennifer Cruz (PhD program, ChBE, June 2009) (w. Annelise Barron) (Genentech)
13. Laura De Laporte (PhD program, ChBE, June 2009) (Scientist, DWI RWTH Aachen)
14. David Salvay (PhD program, MSTP and ChBE, June 2009)(w. W.L. Lowe) (Residency)
15. Abbie Bellis (PhD program, ChBE, June 2012) (w/ J.S. Jeruss)
16. Michael Weiss (PhD program, ChBE, January 2012) (w/ J.S. Jeruss) (Quanticell)
17. Jaclyn Shepard (PhD program, ChBE, April 2012) (post-doc MIT)
18. Hannah Tuinstra (PhD program, ChBE, June 2012) (Eli Lilly)
19. Romie Gibly (PhD program, MSTP and IBiS, June 2011) (w. W.L. Lowe) (Med School)
20. Jack Graham (PhD program, MSTP, August 2012) (w. X. Luo) (Med School)
21. Ryan Boehler (PhD program, ChBE, June 2013)
22. David Tagler (PhD program, ChBE, July 2013) (w. T.K. Woodruff)
23. Beatriz Penalver (PhD program, ChBE, with L. Broadbelt)
24. Anaar Siletz (PhD program, MSTP, September 2012) (Med School)
25. Woon Teck Yap (PhD program, MSTP, July 2013)
26. Aline Thomas (PhD program, BME, July 2013)
27. Kelan Hlavaty (PhD program, BME)
28. Michael Skoumal (PhD program, ChBE)
29. Jeane Chen (PhD program, ChBE)
30. Daniel Margul (PhD program, MSTP)
31. Peter Rios (PhD program, BME)
32. Brian Aguado (PhD program, BME)
33. Robert Kuo (PhD program, ChBE)
34. Jeffrey Liu (PhD program, IBiS)
35. Grace Bushnell (PhD program, BME)
36. Luke Brechtelsbauer (PhD program, ChE)
37. Daniel Clough (PhD program, BME)
38. Richard Youngblood (PhD program, BME)
39. Dominique Smith (PhD program, BME)
40. Yining Zhang (PhD program, ChE)
41. Kevin Hughes (PhD program, BME)

#### **MASTER'S STUDENTS**

42. Walter Grubb (Master's in Biotechnology, 9/2000)
43. Joseph Scaduto (Master's in Biotechnology, 9/2000)
44. Moriah Nof (M.S., Chemical Engineering, 2/2001)
45. Robert Yu ((Master's in Biotechnology, 9/2001)
46. Lisa Ludvig (Master's in Biotechnology, 9/2001)
47. Sinead Igoe (Master's in Biotechnology, 9/2001)
48. Laura Swift ((Master's in Biotechnology, 12/2006)
49. Kanika Bhatia (Master's in Biotechnology, 9/2007)
50. Leocadia Mosquea (Master's in Biotechnology, 12/2007)
51. Aaron Bowling ((Master's in Biotechnology, 9/2008)
52. Elizabeth Parrish (MS program, ChBE 9/2008) (w/ T.K. Woodruff)
53. Lake Kubilius (MS program, ChBE 9/2009)
54. Will Briley (MS program, ChBE)
55. Chia-Hsua Lin (Master's in Biotechnology, 12/2009)
56. Ani Rajan (Master's in Biotechnology, 12/2009)
57. Shreya Rajan (Master's in Biotechnology, 6/2013)
58. Christine Ricci (Master's in Biotechnology, 6/2013)
59. Dennis Bluver (MS, ChBE, Expected 12/2012)

60. Rachel Smith (MS, ChBE) (w. T.K. Woodruff, 7/2013)
61. Bansi Vedia (Master's in Biotechnology, 6/2013)
62. Mitch Carlson (MS program, BME, present)

**UNDERGRADUATE STUDENTS**

1. Hammad Saudye (Chemical Engineering, B.S. 6/2002)
2. Justin Starzyk ((Chemical Engineering, B.S. 6/2002)
3. Amy Lewis (Chemical Engineering B.S. 6/2002)
4. Prashant Patel (Biomedical Engineering B.S. 6/2003)
5. Andrew Kim (Biomedical Engineering B.S., 6/2002)
6. Adam Holdt (Biomedical Engineering B.S. 6/2002)
7. Stephen Sung (Chemical and Biological Engineering, B.S. 6/2003)
8. Matthew Volk (Chemical and Biological Engineering, B.S. 6/2003)
9. Peter Chung (Biomedical and Biological Engineering)
10. Brian Pasquini (Chemical and Biological Engineering, B.S. 6/2003))
11. Jason Deck (Chemical and Biological Engineering)
12. Kinjal Shah (BMBCB)
13. Kwad Mensah (REU student, University of Illinois)
14. Bonnie Lai (Biomedical Engineering, B.S. 6/2005)
15. Shimon Unterman (Biomedical Engineering, B.S. 6/2005)
16. Stacey Galvez (Biomedical Engineering, Washington University)
17. Matthew Rafferty (Chemical Engineering)
18. Anna Yan (Biomedical Engineering)
19. Monica Gomberg (BMBCB)
20. Alyssa Huang (BMBCB)
21. Chris Meade (Chemistry, Wheaton College)
22. Tim Downing (ChBE)
23. Andy Adler (BME)
24. Yee Hoong Chow (ChBE)
25. Michael Mui (ChBE)
26. Sara Dubbury (BMBCB)
27. Missy Mae DuCommon (Bates College, 2007-10)
28. Alan Fast (ChBE)
29. Gina Piscetello (ISP)
30. Alyson Stevans (ChBE)
31. Christine Wang (BME)
32. Jharrett Bryant (Yale, ChBE, SROP program 2008, 09)
33. Nikhil Sahai (BMBCB)
34. Ashley Goodman (BMBCB)
35. Evan Rausch (English)
36. Ashley Stevens (ChBE)
37. Michael Silliman (ChBE)
38. Albert Hong (BME)
39. Deepa Ramadurai (Biology)
40. Stanley Weng (BME)
41. Chunseob Yoon (Economics)
42. John Regan (BME)
43. Yiquan Sun (Biology)
44. Sarah Ko (Univ. of Rochester)
45. Nick Anderson (ChBE)
46. Quidi Wu (NU, undeclared)

47. Matthew Pilecki (Biology)
48. Christine Wang (BME)
49. Colin Morlock (Case Western)
50. Michael Mui
51. Stanley Weng
52. Dennis Bluver
53. Todor Kukushliev (ChBE)
54. Ting He (ChBE)
55. Taylor Kazanova (ChBE)
56. Jesse Zhang (BME)
57. Kenan Moss, Utah State University, Biological Engineering
58. Radhika Agarwal (Biological Sciences)
59. Victor Aguilar (Rose Hulman, BME)
60. Erika Moore
61. Kaira Lujan, Biological Sciences, Dartmouth
62. Lana Kammerer
63. Brendan Tran (Biological Sciences)
64. Carol Gross
65. Chaitanya Medicherla
66. Dominique Smith (BME)
67. Evan Rausch
68. Farrukh Virani
69. Jenna Stohr
70. Jin Yang
71. Linnette Figuero
72. Matt Pilecki
73. Michael Silliman
74. Nam Ryul Kim
75. Nick Anderson
76. Nizamuddin Hashemi
77. Salpi Apkarian
78. Susan Sun
79. Zach Bannon
80. Ho-Hyun Sun
81. Donna Hassani (Psychology)
82. Niharika Chauhan (BME, ChBE)
83. Andrew Gomez
84. Mindie Chu
85. Eric Jiang (ChBE)
86. Yingying Ren (ChBE)
87. Pamela Scalise (ChBE)
88. Rida Malick (Biological Sciences)
89. Mark Caswell (ChBE 2013)
90. Adam Morabito (ChBE 2016)
91. Aashish Jain, Jan-May 2013. Chemical and Biological Engineering
92. Raymond Lee (Biological Sciences)
93. Kaira Lujan, B.S. Candidate in Biomedical Engineering, Dartmouth College
94. Sam Goldsmith (High school student)
95. Ruizhi Dong (BME)
96. Leon Wang (BME)
97. Madeleine North (BME)



98. Lei Mei (international research exchange, China)
99. Mary Munsell (BME)
100. Mitchell Johnson (BME)
101. Sydney Jacques (BME)
102. Kevin Rychel
103. Sanjay Subramanian

#### **F. NORTHWESTERN COURSES TAUGHT**

1. ChE 210: Analysis of Chemical Process Systems (W 00, W 01, W03)
2. ChE 307: Kinetics and Reactor Engineering (Sp 00, Sp 01, Sp 02)
3. ChE 351: Process Economics and Design (F 02, F 03)
4. ChE 275: Biology for Engineers (W 04, W 05)
5. ChE 475: Cell-Material Interactions (F 01, Sp 03, F 04, F 06, F, 08, W 10, F 10, F 11, )
6. ChBE 478: Advances in Biotechnology (Sp 08, 09, 10, 11, 12, 13)
7. EDC: (Sp 05)
8. EA3: (Sp 07, 08, 09, 12)
9. Topics in Molecular Medicine, (Summer 06, 07, 08, 09, 10)

#### **G. NORTHWESTERN SERVICE AND COMMITTEES**

1. University
  - a. IBNAM Advisory Board (2003-2006, 2009-10)
  - b. IBiS Executive Committee (2005-2008)
2. McCormick
  - a. Undergraduate Committee (2002-3)
  - b. Faculty search committees (Mechanical Engineering 2003)
3. Department of Chemical Engineering:
  - a. Student chapter advisor for American Institute for Chemical Engineers (1999-2001)
  - b. Student chapter advisor for Omega Chi Epsilon (1999-2001)
  - c. Graduate student recruiting committee (1999-2004)
  - d. Faculty search committee (2002, 2003)
  - e. Administrator hiring committee (2002)
  - f. Safety committee (2003)
  - g. Graduate Program Director (2006)
  - h. Faculty Search Committee Chair (2007)
4. Materials Research Center
  - a. Research Experience for Science Teachers 2000-2002

#### **H. PROFESSIONAL SERVICE**

1. NSF Proposal Panel (Mar, 2000, Dec. 2001, Dec. 2002, individual proposals as well)
2. NIH Proposal Review Panels
  - a. NIDCR, NIDDK, NIBIB, NIAID, NINDS
3. NASA Panel
4. NIH Biotechnology Training Program – Director, September 2008 – present
5. Organizer, Materials Research Society, San Francisco, Spring 2013
6. Annual Review Biomedical Engineering, Editorial Committee guest member, October 2012
7. Editorial Board
  - a. Biotechnology and Bioengineering
  - b. Molecular Therapy
  - c. BIOMATTER
  - d. CRS Drug Delivery and Translational Research
  - e. Expert Review of Medical Devices

## I. PROFESSIONAL MEETINGS

1. Session Co-Chair "Biomaterial-Host Interaction" AIChE, November, 2000.
2. Session Co-Chair "Cellular Engineering: Receptor and Signaling" BMES 2001
3. Session Co-Chair "Intracellular Processes " AIChE, November, 2001
4. Organizing Committee "Gene Therapy and Drug Delivery" BMES October 2002
5. Session Co-Chair "Biomimetic Materials" AIChE, November, 2002
6. Session Organizer "Functionalized Materials: Cell Interactions" Society for Biomaterials, April 2003.
7. Session Co-Chair "Biomimetic Materials" AIChE, November, 2003
8. Organizing Committee "Symposia Biomaterials for Tissue Engineering" Materials Research Society, December 2003.
9. Director Area 8b, AIChE, 2007, 2008
10. MESD Director, AIChE 2008, 2009
11. MRS Spring 2013 Meeting Organizer

## J. FUNDING

### ACTIVE

U54 HD076188 (Woodruff (Shea is PI on Project 1))      04/01/2013 – 03/31/2018      0.19 academic  
 NICHD      \$213,929

Center for Reproductive Research at Northwestern University

The major goals are to (1) Investigate the dynamic gene expression during follicle growth; (2) Investigate aneuploidy in response to endocrine disruptors, and (3) Investigate the growth of follicles from aged mice.

R01GM097220 (Jeruss & Shea)      09/10/2012 – 06/30/2016      0.70 academic  
 NIGMS      \$221,089      0.15 summer

Measuring Signaling Pathway Dynamics During Tissue Growth in Hydrogels

The major goal is to identify active pathways in normal mammary epithelial cells and breast cancer cells to detect the transition from a normal to pre-invasive phenotype, or a pre-invasive to invasive phenotype, which can identify aberrant pathway activity that may lead to interventions that control the cell response.

### **Completed Research Support (Selected)**

*Source:* National Cancer Institute 5K22CA138776-03      PIs: Jeruss      *Project Period:* 7/1/10 - 6/30/13

*Title:* The Oncogenic Significance of Cyclin Overexpression and Smad 3 Tumor Suppression

*Major Goal:* To investigate Smad action and CDK activity in Triple Negative Breast Cancer

*Source:* International Myeloma Foundation      PI: Shea      *Project Period:* 1/1/12 - 12/31/12

*Title:* Identification of Gene Networks Regulated by Glucocorticoids in Myeloma

*Major Goals:* Apply a cell array technology to identify signaling pathways in myeloma.

*Source:* C2006-00997 Searle Funds at the CCT      PI: Shea      *Project Period:* 2/1/10 – 1/31/12

*Title:* High Throughput Signaling Pathway Analysis during Cellular Organization into Structures

*Major Goal:* The development of a system for the dynamic, high-throughput quantification of signaling pathway activity and application to investigate normal and abnormal organization of cells into structures.

*Source:* W81XWH-10-1-0411      U.S. Army Medical Research and Materiel Command      PI: Shea

*Project Period:* 9/1/10 – 2/29/12



CURRICULUM VITAE

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- PSN: A001 (Shea) 02/01/2014 – 11/30/2014 0.04 academic  
 Cour Pharmaceutical Development Company, Inc. \$19,500  
 Gliadin Project for Celiac  
 Major goal is to produce PLG particles that encapsulate proteins and peptides. Some of the proteins or peptides will be provided by Cour or its partners. In addition to production, the particles will be characterized and lyophilized for delivery to Cour.
- PSN: A002 (Shea) 02/01/2014 – 11/30/2014 0.04 academic  
 Cour Pharmaceutical Development Company, Inc. \$45,500  
 Insulin Project for Type 1 Diabetes  
 Major goals: 1. Prepare and analyze  $\approx$  500-nm protein-encapsulating (and empty) PEMA-PLG nanoparticles. 2. Use protein assays to determine loading of peptide/protein in the particle. 3. Determine zeta potential and size of particles. 4. Lyophilize and provide to Cour
- Ltr. 4/10/13 (Fawzi) 04/01/2013 – 09/30/2014 0.09 academic  
 Macula Society \$15,000  
 Platform for Long-Term Delivery of Anti-Angiogenic Peptides for Intravitreal Treatment of Neovascular Eye Disease  
 Major Goals: To develop a platform for delivery of an anti-angiogenic peptide to the eye
- Agmt 11/4/13 (Shea) 11/01/2013 – 10/31/2014 0.09 academic  
 Pioneer Biosolutions, Inc. \$9,022  
 Identification of GMP for Manufacture of Microporous PLG Scaffolds  
 Major goals of this proposal are to establish the GMP production of microporous PLG scaffolds. The need is to define the reagents, equipment, and procedures needed for fabrication of the scaffolds, which involves the initial fabrication of microspheres and the subsequent assembly of the microporous scaffold. A second need is to define the criteria that would indicate the scaffold is functional and to establish quality control criteria. A third need is for documentation of the process, which I interpret as sheets into which measurements can be written or entered into a computer. A fourth need is to identify and validate islet seeding procedures. A fifth need is to determine sterilization procedures for the scaffolds. We note that the GMP facility on campus offers training on the GLP/GMP with certification, and the personnel will attend this training program.
- T32 GM008449 (Shea) 07/01/2009 – 06/30/2019 0.90 academic  
 NIGMS \$255,192  
 Biotechnology Predoctoral Training Program  
 The major goal is to provide comprehensive and interdisciplinary Biotechnology training opportunities for a select group of Ph.D. students from five participating Northwestern University graduate programs. This program involves 36 program preceptors (supervising faculty members) across 7 Northwestern departments. There are 7 trainee slots total funded by the program.
- R01 EB005678 (Shea) 01/01/2011– 12/31/2014 0.76 summer  
 NIBIB \$367,292  
 Controlled Release Scaffolds for Nerve Regeneration  
 The major goal is to develop multiple channel bridges that can be inserted into a spinal cord injury site, and gene delivery is used to reduce the inflammatory response, degrade the glial scar, and promote axonal re-entry into the host tissue to form functional connections with intact circuitry.
- R01 EB009910 10-04 (Shea & Lowe) 05/01/2010 – 04/30/2015 0.27 academic  
 NIBIB \$15,049 0.60 summer  
 Protein-Releasing Microporous Scaffolds for Cell Replacement Therapy

## CURRICULUM VITAE

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The major goal is to enhance cell replacement therapy for diabetes, we are developing scaffolds for transplantation of islets or insulin-secreting cells into peritoneal fat. These scaffolds provide a support for cell growth and can deliver proteins to enhance cell survival and function following islet transplantation.

5R01EB003806 (Stupp) 02/10/2011 – 1/31/2016 1.20 academic  
NIBIB \$36,500 (Shea portion)

Bioactive Scaffolds for Regeneration in Spinal Cord Injury

The major goal is to develop self-assembling hydrogels for that could be used to prevent paralysis after spinal cord injury and also a different therapy that could be surgically implanted to reverse paralysis.

Agreement executed 10/10/2013 (Jeruss & Shea) 10/01/2012 – 09/30/2014 0.12 academic  
Society of Surgical Oncology, Inc. / Susan G. Komen Breast Cancer Foundation \$50,000  
Synergistic Action of Carboplatin/Eribulin in Combination with CDK Inhibitor Therapy for the Treatment of Triple Negative Cancer

The major goal is to investigate CDK inhibitors with other factors in Triple Negative Breast Cancer.

1U54HD076188 (Shea) 04/01/2013 – 03/31/2018 0.09 academic  
NICHD \$214,038

Project 2: “Engineered environments for ovarian follicle transplantation” within the U54 Center for Reproductive Research after Disease

Major Goal: Develop biomaterial systems that support the engraftment and function of transplanted ovarian follicles, which can be employed for fertility preservation for women facing a cancer diagnosis.

1UH2ES022920-01 (Woodruff & Shea) 09/17/2012 – 08/31/2014 0.46 academic  
NIEHS \$161,812

Ex Vivo Female Reproductive Tract Integration In a 3D Microphysiologic System

The major goals are to 1) Establish independent in vitro culture systems for human follicle, fallopian tube, uterus and vagina using the 3DKUBE platform (UH2), 2) Develop PK models for drug delivery and hormone diffusion in perfused in vitro 3DKUBE cultures of reproductive tract tissues (UH2), and 3) Link the OvaryKUBE, TubeKUBE, UteroKUBE, and VagiKUBE into an integrated system FemKUBE that recapitulates the physiologic function of the human reproductive tract (UH3) and responds to known agonists and antagonists.