CURRICULUM VITAE FOR JENNIFER ELISSEEFF

DEMOGRAPHIC INFORMATION

Current Appointments

2010 - present	Jules Stein Professorship, Wilmer Eye Institute
2010 - present	Appointment in Materials Science and Engineering, Chemical and Biomolecular Engineering
2007 - present	Associate Professor of Biomedical Engineering and Orthopedic Surgery
2001 - 2007	Assistant Professor of Biomedical Engineering

Personal Data

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Education and Training

Undergraduate	9/91 - 5/93 **Honors Bachelor of Science in Chemistry**, Carnegie Mellon University, University and Departmental Honors, Polymer Science Option
Doctoral/Graduate	9/94 - 5/99 **Ph.D. in Medical Engineering,** Harvard-MIT Division of Health Sciences and Technology**,** Advisor: Robert S. Langer**,** Dissertation: *Transdermal Photopolymerization of Hydrogels for Cartilage Tissue Engineering***,** Coursework: Standard MIT organic chemistry and Harvard Medical School 1st and 2nd year curriculum
Postdoctoral	99 - 01 **Postdoctoral Fellowship,** Developmental Biology, National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda Maryland

Professional Experience

2011- present	Full Professor, Johns Hopkins School of Medicine
2007 - 2011	Associate Professor with tenure
2006/2001 - 2007	Assistant Professor, Johns Hopkins University, Department of Biomedical Engineering, Baltimore, MD
2003 -	Joint Appointment, Orthopedic Surgery, Johns Hopkins University
1999 - 6/2001	Pharmacology Research Associate Fellow, National Institute of General Medical Sciences, NIH, Bethesda, MD. Laboratory of Yoshi Yamada, Molecular Biology Section, National Institute of Dental and Craniofacial Research
1/1992 - 5/1994	Undergraduate Research, Laboratory of Kryzstof Matyjaszewski, Carnegie Mellon University, Pittsbugh, PA (Internship**,** Laboratoire de Macromolécules, University of Paris VI, France, 1993)

RESEARCH ACTIVITIES

Peer Reviewed Original Science Publications

1. **J. Elisseeff,** K. Anseth, R. Langer, and J. Hrkach, "Synthesis and Characterization of Photocrosslinked Polymers Based on Poly(L-lactic acid-co-L-aspartic acid)," *Macromolecules*, 1997, 30(7):2181-2184.

2. T. Hadlock, **J. Elisseeff**, R. Langer, J. Vacanti, and M. Cheney, "A Tissue-Engineered Conduit for Facial Nerve Repair," *Arch Otolaryngol Head Neck Surg*, 1998, 124(10):1081-6.

3. V. Ting, CD Sims, LE Brecht, JG Kasabian, AK Connelly, **J. Elisseeff,** GK Gittes, and MT Longaker, "*In vitro* prefabrication of human cartilage shapes using fibrin glue and human chondrocytes," *Ann Plast Surg*, 1998,

40(4):413-420.

4. RP Silverman, **J. Elisseeff**, D. Passaretti, W. Huang, MA Randolph and MJ Yaremchuck, "Transdermally Photopolymerized Adhesive for Seroma Prevention," *Plastic and Reconstructive Surgery*, 1999, 103:531-535.

5. **J. Elisseeff**, K. Anseth, W. McIntosh, D. Sims, M. Randolph and R. Langer, "Transdermal Photopolymerization for Minimally Invasive Implantation," *Proc. Nat. Acad. Sci., USA*, 1999, 96(6):3104.

6. **J. Elisseeff**, K. Anseth, W. McIntosh, D. Sims, M. Randolph, M. Yaremchuk, and R. Langer, "Transdermal Photopolymerization of PEO-Based Injectable Hydrogels for Tissue Engineering Cartilage," *Plastic and Reconstructive Surgery*, 1999, 104(4):1014-1022.

7. **J. Elisseeff**, W. McIntosh, K. Anseth, S. Riley, P. Ragan, and R. Langer, "Photoencapsulation of chondrocytes in Poly(ethylene oxide)-based Semi Interpenetrating Networks," *Journal of Biomedical Materials Research*, 2000, 51(2):164-71.

8. **J. Elisseeff,** W. McIntosh, K. Fu, T. Blunk and R. Langer, "Controlled Released IGF-I and TGF-□on Bovine Chondrocytes Encapsulated in a Photopolymerizing Hydrogel," *Journal of Orthopedic Research*, 2001, 19(6):1098-104.

9. KS Anseth, PJ Martens, AT Metters, SJ Bryant, **J. Elisseeff**, and CN Bowman, "*In situ* forming degradable networks and their application in tissue engineering and drug delivery," *J Control Release*, 2002, 78(1-3):199-209.

10. DA Wang, J. Ji, YH Sun, JC Shen, LX Feng, and **J. Elisseeff**, "*In situ* Immobilization of Proteins and RGD Peptide on Polyurethane Surfaces via Poly(ethylene oxide) Coupling-polymers for Human Endothelial Cell Growth," *Biomacromolecules*, 2002, 3(6):1286-95.

11. DA Wang, LX Feng, J. Ji, YH Sun, XX Zheng, and **J. Elisseeff**, "Novel Human Endothelial Cell-engineered Polyurethane Biomaterials for Cardiovascular Biomedical Applications," *J. Biomed. Mater. Res.*, 2003, 65A(4):498-510.

12. Q. Li, DA Wang, and **J. Elisseeff**, "Heterogenous-phase Reaction of Glycidyl Methacrylate and Chondroitin Sulfate: Mechanism of Ring-open and Transesterification Competition," *Macromolecules*, 2003, 36(7):2556-2562.

13. CG Williams, TK Kim, A. Taboas, A. Malik, P. Manson, and **J. Elisseeff,** "In Vitro Chondrogenesis of Bone Marrow-Derived Mesenchymal Stem Cells in a Photopolymerizing Hydrogel," *Tissue Engineering*, 2003, 9(4):679-88.

14. DA Wang, CG Williams, Q. Li, B. Sharma, and **J. Elisseeff,** "Synthesis and Characterization of a Novel Degradable Phosphate-containing Hydrogel," *Biomaterials*, 2003, 24(22):3969-3980.

15. L. Lum, N. Cher, CG Williams, and **J. Elisseeff**, "An extracellular matrix extract for tissue-engineered cartilage," *IEEE EMB Engineering in Medicine and Biology*, 2003, 22(5):71-6.

16. Kim TK, Sharma B, Williams CG, Ruffner MA, Malik A, McFarland EG, **Elisseeff JH**., "Experimental model for cartilage tissue engineering to regenerate the zonal organization of articular cartilage," *Osteoarthritis Cartilage*. 2003 Sep;11(9):653-64.

17. Wang DA, Williams CG, Li Q, Sharma B, **Elisseeff JH.**, "Synthesis and characterization of a novel degradable phosphate-containing hydrogel," *Biomaterials.* 2003 Oct;24(22):3969-80.

18. Q. Li, CG Williams, DN Sun, J. Wang, DA Wang, B. Sharma, KW Leong, and **J. Elisseeff**, "Photocrosslinkable polysaccharides based on chondroitin sulfate for tissue engineering," *Journal of Biomedical Materials Research*, 2004, 68A(1):28-33.

19. DA Wang, CG Williams, F. Yang, and **J. Elisseeff**, "Tissue-Initiated Integration of Biomaterials," *Advanced Functional Materials*, 2004, 14(12): 1152-1159.

20. A. Alhadlaq, **J. Elisseeff**, L. Hong, CG Williams, AI Caplan, B. Sharma, D. Lennon, RA Kopher, S. Tomakoria, PA Clark, RV Patel, NT Lewis, A. Peptan, S. Chaieb, S. Shah, and J. Mao, "Adult StemCell Driven Genesis of Human-Shaped Articular Condyle," *Annals of Biomedical Engineering*, 2004, 32(7):911-23.

21. CG Williams, A. Malik, TK Kim, P. Manson, and **J. Elisseeff**, "Variable Cytocompatibility of Six Cell Lines with Photoinitiators used for Polymerizing Hydrogels and Cell Encapsulation," *Biomaterials*, 2005, 26:1211-8.

22. DA Wang, CG Williams, N. Cher, HJ Lee, B. Sharma, and **J. Elisseeff**, "Bioresponsive Phosphoester Hydrogels for Bone Tissue Engineering," *Tissue Engineering*, 2005, 11(1/2):201.

23. MS Kim, NS Hwang, J. Lee, TK Kim, KW Leong, MJ Shamblott, J. Gearhart, and **J. Elisseeff,** "Musculoskeletal Differentiation of Cells Derived from Human Embryonic Germ Cells," *Stem Cells*, 2005, 23(1):113-123.

24. J MG Reyes, S. Herretes, A. Pirouzmanesh, DA Wang, and **J. Elisseeff,** Albert Jun, MD, Peter J. McDonnell, Roy S. Chuck, Ashley Behrens, "A Modified Chondroitin Sulfate Aldehyde Adhesive for Sealing Corneal Incisions," *Invest. Ophth. Vis. Sci*, 2005, 46(4):1247.

25. Sikder S., Reyes, JM, Moon CS, Suwan-apichon O., **Elisseeff, JH**, Chuck, RS, "Noninvasive mitochondrial imaging," *Photochem Photobiol*., 2005, 81(6):1569-71.

26. L. H. Holton, Hafez Haerian, Ronald P. Silverman, Thomas Chung, **Jennifer H. Elisseeff**, Nelson H. Goldberg, and Sheri Slezak, "Improving Long-Term Projection in Nipple Reconstruction Using Human Acellular Dermal Matrix: An Animal Model," *Annals of Plastic Surgery*, 2005, 55(3):304.

27. Yang F, Williams CG, Wang DA, Lee H, Manson PN, **Elisseeff J., "**The effect of incorporating RGD adhesive peptide in polyethylene glycol diacrylate hydrogel on osteogenesis of bone marrow stromal cells," *Biomaterials*, 2005, 26 (30):5991-5998.

28. Y. L. Wang, R. Xiao, F. Yang , BO Karim, A. J. Iacovelli, J.L. Cai , C.P. Lerner, J.T. Richtsmeier, J.M. Leszl, C.A. Hill, K. Yu, D.M. Ornitz, **J. Elisseeff**, D.L. Huso, and E.W. Jabs, "Apert syndrome $FGFR2^{+/S252W}$ mouse model reveals abnormal chondrogenesis and osteogenesis," *Development*, 2005, 132(15):3537.

29. B.Sharma, C. G. Williams, M. Khan, P. Manson, and **J. Elisseeff**, "*In vivo* photoencapsulation of mesenchymal stem cells in an injectable hydrogel for cartilage tissue engineering," *Plastic and Reconstructive Surgery*, 2007, 119(1):112-20.

30. Mikos AG, Herring SW, Ochareon P, **Elisseeff J**, Lu HH, Kandel R, Schoen FJ, Toner M, Mooney D, Atala A, Van Dyke ME, Kaplan D, Vunjak-Novakovic G. "Engineering complex tissues," *Tissue Eng*. 2006 Dec;12(12):3307-39.

31. A. Pirouzmanesh, S. Herretes, J MG Reyes, O. Suwan-Apichon, RS Chuck, DA Wang, **J. Elisseeff**, WJ Stark, and A. Behrens, "Modified microkeratome-assisted posterior lamellar keratoplasty using a novel tissue adhesive as sealant," *Archives in Ophthalmology*, 2006, 124(2):210-4.

32. Lee, H.J., Lee, J., Chansakul T., Yu, C., **Elisseeff, J.**, Yu, S.M., "Collagen Mimetic Peptide-Conjugated Photopolymerizable PEG Hydrogel," *Biomaterials*. 2006 Oct;27(30):5268-76.

33. Qiang Li, Jun Wang, Shilpa Shahani, Danny D.N. Sun, Blanka Sharma, **Jennifer H. Elisseeff**, and Kam W. Leong, "Biodegradable and photocrosslinkable phosphoester hydrogel," *Biomaterials*, 2006, 27(7):1027-34.

34. Ramaswamy, S., DA Wang, KW Fishbein, **JH Elisseeff,** RG Spencer, "An analysis of the integration between articular cartilage and nondegradable hydrogel using magnetic resonance imaging," *J Biomed Mater Res B Appl Biomater*, 2006, April; 77(1):144-8.

35. Nathaniel S. Hwang, Shyni Varghese and **Jennifer Elisseeff**, "Enhanced Chondrogenic Differentiation of Murine Embryonic Stem Cells in Hydrogels with Glucosamine," *Biomaterials*, 2006 Dec;27(36):6015-23.

36. J MG Reyes, S. Herretes, S. Fermanian, F. Yang, DB Murphy, and **J. Elisseeff**, Chuck RS, "Metabolic Changes in Mesenchymal Stem Cells in Osteogenic Media Measured by Autofluorescence Spectroscopy," *Stem Cells***,** 2006**.** May;24(5):1213-7.

37. Schmidt O, Mizrahi J, **Elisseeff J**, and D Seliktar, "Immobilized fibrinogen in PEG hydrogels does not improve chondrocyte-mediated matrix deposition in response to mechanical stimulation," *Biotechnol Bioeng*. 2006, 95(6):1061-9.

38. Zhang Z, Messana J, Hwang NS, **JH Elisseeff**, "Reorganization of actin filaments enhances chondrogenic differentiation of cells derived from murine embryonic stem cell," *Biochem Biophys Res Commun.*, 2006 Sep 22; 348(2):421-7.

39. Hwang NS, Varghese S, Zhang Z, **Elisseeff J**., "Chondrogenic differentiation of human embryonic stem cell-derived cells in arginine-glycine-aspartate-modified hydrogels," *Tissue Engineering* 2006 Sep;12(9):2695-706.

40. Hwang, N., Kim, M.S, Sampattavanich, S., Baek, J.H., Zhang, Z., and **Elisseeff, J**. "Effects of Three Dimensional Culture and Growth Factors on the Chondrogenic Differentiation of Murine Embryonic Stem Cells," *Stem Cells*, 2006 Feb;24(2):284-91.

41. Sharma B, Williams CG, Kim TK, Sun D, Malik A, Khan M, Leong K, **Elisseeff JH**. "Designing zonal organization into tissue-engineered cartilage," *Tissue Eng*. 2007 Feb;13(2):405-14.

42. Wang, D, Cascio, B, Gurkan, I, and **J. Elisseeff, "**Multifunctional Chondroitin Sulfate for Tissue Integration," *Nature Materials* 2007, 6(5):385-92. *Featured in News and Views, Science, Commentary in Nature Materials.*

43. Varghese S., Sahani S., Theprungsirikul P., Hwang N. S., Yarema, K., **Elisseef J. H.** "Glucosamine Modulates Chondrocyte Proliferation, Matrix Synthesis and Gene Expression," *Osteoarthritis Cartilage*, 2007, 15(1):59-68.
Rated as the fourth "hottest" paper that appeared in Osteoarth. Cartilage in the field of Medicine and Dentistry by ***Science Direct*** (http://top25.sciencedirect.com/)

44. Hwang NS, Varghese S, Lee HJ, Theprungsirikul P, Canver A, Sharma B, **Elisseeff J**. "Response of zonal chondrocytes to extracellular matrix-hydrogels," *FEBS Lett.* 2007 Sep 4;581(22):4172-8.

45. Hwang NS, Varghese S, Puleo C, Zhang Z, **Elisseeff J**. "Morphogenetic signals from chondrocytes promote chondrogenic and osteogenic differentiation of mesenchymal stem cells," *J Cell Physiol*. 2007 Aug;212(2):281-4.

46. Terraciano V, Hwang N, Moroni L, Park HB, Zhang Z, Mizrahi J, Seliktar D, **Elisseeff J**. "Differential Response of Adult and Embryonic Mesenchymal Progenitor Cells to Mechanical Compression in Hydrogels," *Stem Cells*. 2007, 25(11):2730-8.

47. Hwang, NSY, Varghese, S., Lee HJ, et al., "Biomaterials-directed in vivo commitment of mesenchymal cells derived from human embryonic stem cells," *FASEB J*, 2007, 21(5): A145.

48. Hwang, NS, Varghese, S., **Elisseeff,J**., "Cartilage tissue engineering: Directed differentiation of embryonic cells in three dimensional hydrogel culture," *Methods Mol Biol*, 2007, 407:351-73.

49. Varghese S, Hwang NS, Canver AC, Theprungsirikul P, Lin DW, **Elisseeff J**. "Chondroitin sulfate based

niches for chondrogenic differentiation of mesenchymal stem cells," *Matrix Biol*. 2008, 581(22):4172.

50. Lee, H.J., Yu, C., Chansakul, T., Hwang, N.S., Varghese, S., **Elisseeff, J**., "Enhanced Chondrogenesis of Mesenchymal Stem Cells in Collagen Mimetic Peptide-modified Microenvironment," *Tissue Engineering* Part A, 14(11):1843-51, 2008.

51. N. Garagorri, S. Fermanian, OD Schein, S. Chakravarti, and **J. Elisseeff**, "Keratocyte Behavior in Three-Dimensional Photopolymerizible Poly(Ethylene Glycol) Hydrogels," *Acta Biomater*, 2008, 4(5):1139.

52. Lee, H.J., Yu, C., Chansakul, T., Varghese, S., Hwang, N.S., **Elisseeff, J**., "Enhanced Chondrogenic Differentiation of Embryonic Stem Cells by Coculture with Hepatic Cells," *Stem Cells and Development* 2008 Jun;17(3):555-63.

53. Yang, F, Y. Wang, Z. Zhang, B. Hsu, EW Jabs, and **J. Elisseeff**, "The study of abnormal bone development in Apert syndrome Fgfr2 (+/S252W) mouse using a 3D hydrogel culture model," *Bone*, 43(1):55-63 (2008).

54. N. Hwang, S. Varghese, and **J. Elisseeff**, "Derivation of chondrogenically-committed cells from human embryonic cells for cartilage tissue regeneration," *PLoSOne*, 2008 3(6), p2498.

55. N. Hwang, S. Varghese, H. J. Lee, Z. Zhang, Z. Ye, J Bae, L. Cheng, and **J. Elisseeff**, "In vivo commitment and functional tissue regeneration using human embryonic stem cell-derived mesenchymal cells," *Proceedings of the National Academy of Sciences*, 2008, 105(52):20641-6.

56. Messana, J., Hwang, NS, Coburn, J, **Elisseeff, JH**, Zhang, Z., "Size of embryoid body influences chondrogenesis of mouse embryonic stem cells," *J Tissue Eng Regen Med*, 2008, 2(8):499-506.

57. Hillel AT, Varghese S, Petsche J, Shamblott MJ, **Elisseeff JH**. "Embryonic germ cells are capable of adipogenic differentiation *in vitro* and *in vivo*," *Tissue Engineering Part A*, 2009 Mar;15(3):479-86.

58. Appelman, TP, Mizrahi, J., **Elisseeff, J**, Seliktar, D, "The differential effect of scaffold composition and architecture on chondrocyte response to mechanical stimulation," *Biomaterials*, 2009, 30(4):518.

59. Preiss-Bloom O, Mizrahi J, **Elisseeff J**, Seliktar D., "Real-time monitoring of forces response measured in mechanically stimulated tissue-engineered cartilage," *Artif Organs.* 2009 Apr;33(4):318-27.

60. Ponce Marquez S, Martinez VS, McIntosh Ambrose W, Wang J, Gantxegui NG, Schein O, **Elisseeff J**., "Decellularization of bovine corneas for tissue engineering applications," *Acta Biomater.* 2009 Jul;5(6):1839-47.

61. McIntosh Ambrose W, Salahuddin A, So S, Ng S, Ponce Marquez S, Takezawa T, Schein O, **Elisseeff J**., "Collagen vitrigel membranes for the in vitro reconstruction of separate corneal epithelial, stromal, and endothelial cell layers," *J Biomed Mater Res B Appl Biomater*. 2009 Aug;90(2):818-31.

62. Strehin I, Ambrose WM, Schein O, Salahuddin A, **Elisseeff J**., "Synthesis and characterization of a chondroitin sulfate-polyethylene glycol corneal adhesive," *J Cataract Refract Surg.* 2009 Mar;35(3):567-76.

63. Puleo CM, McIntosh Ambrose W, Takezawa T, **Elisseeff J**, Wang TH. "Integration and Application of Vetrified Collagen in Multilayered Microfluidic Devices for corneal Microtissue Culture," *Lab Chip.* 2009 Nov 21;9(22):3221-7.

64. Hwang, NS, **Elisseeff, J**, "Application of stem cells for articular cartilage regeneration," *J Knee Surg*, 22(1):60-71, 2009.

65. Strehin I, Nahas Z, Arora K, Nguyen T, **Elisseeff J**., "A versatile pH sensitive chondroitin sulfate-PEG tissue adhesive and hydrogel," *Biomaterials*, 2010 Apr;31(10):2788-97.

66. Hillel AT, Taube JM, Cornish TC, Sharma B, Halushka M, McCarthy EF, Hutchins GM, **Elisseeff JH**. "Characterization of human mesenchymal stem cell engineered cartilage: analysis of its ultrastructure, cell density, and chondrocyte phenotype as compared to native adult and fetal cartilage," *Cell Tissues Organs*, 2010;191(1):12-20.

67. Shyni Varghese, Angela Ferran, Nathaniel Hwang Alexander Hillel, Parnduangjai Theprungsirikul, Adam C Canver, Zijun Zhang, Michael Shamblott, John Gearhart, and **Jennifer Elisseeff** "Engineering musculoskeletal tissues with human embryonic germ cell derivatives," *Stem Cells*, 2010 Apr;28(4):765-74 (journal cover).

68. Taly P. Appelman, Joseph Mizrahi, **Jennifer H. Elisseeff**, Dror Seliktar "The influence of biological motifs and dynamic mechanical stimulation in hydrogel scaffold systems on the phenotype of chondrocytes," *Biomaterials*, 2011 (32):1508-1516.

69. Rothenberg AR, Ouyang L, **Elisseeff JH**., "Mesenchymal Stem Cell Stimulation of Tissue Growth Depends on Differentiation State," *Stem Cells Dev*. 2010 Nov 3 PMID: 20887213

70. Reid, Branden; Tzeng, Stephany; Warren, Andrew; Kozielski, Kristen; **Elisseeff, Jennifer**, "Development of a PEG Derivative Containing Hydrolytically Degradable Hemiacetals," *Macromolecules*, 2010, *43* (23), pp 9588–9590.

71. Hwang NS, Varghese S, Li H, **Elisseeff J**, "Regulation of osteogenic and chondrogenic differentiation of mesenchymal stem cells in PEG-ECM hydrogels," *Cell Tissue Res*. 2011, Apr 19. PMID: 21503601

72. Li H, Feng F, Bingham CO, Elisseeff JH. "Matrix metalloproteinases and inhibitors in cartilage tissue engineering," *J Tissue Eng Regen Med*. 2011 Feb 24. PMID: 21351376

73. Coburn J, Gibson M, Bandalini PA, Mao HQ, Laird C, Moroni L, Elisseeff JH. "Biomimetics of the extracellular matrix: An integrated three-dimensional fiber-hydrogel composite biomaterial," *Smart Materials and Structures*. 7(3), 213-222 (2011).

74. Hillel AT, Unterman S, Nahas Z, Reid B, Coburn JM, Axelman J, Chae JJ, Guo Q, Trow R, Thomas A, Hou Z, Lichtsteiner S, Sutton D, Matheson C, Walker P, David N, Mori S, Taube JM, **Elisseeff** JH. "Photoactivated composite biomaterial for soft tissue restoration in rodents and in humans,"*Sci Transl Med*. July 27;3(93):93ra67 (2011). PMID: 21795587

75. Musumeci G, Loreto C, Carnazza ML, Strehin I, **Elisseeff J.,** "OA cartilage derived chondrocytes encapsulated in poly(ethylene glycol) diacrylate (PEGDA) for the evaluation of cartilage restoration and apoptosis in an in vitro model," *Histol Histopathol*. 2011 Oct;26(10):1265-78., PMID: 21870330

76. Hanwei Li, Noel Davison, Lorenzo Moroni, Felicia Feng, Joshua Crist, Erin Salter, Clifton O. Bingham, and **Jennifer Elisseeff**, "Evaluating Osteoarthritic Chondrocytes through a Novel 3-Dimensional *In Vitro* System for Cartilage Tissue Engineering and Regeneration," *Cartilage*, in press.

77. Blanka Sharma, Sara Fermanian, Matthew Gibson, Shimon Unterman, Gary Gold, Brett Cascio, Jeannine Coburn, Norman Marcus, and **Jennifer H. Elisseeff**, "Biomaterials-directed cartilage repair: a pilot clinical study," in revision.

78. Anirudha Singh, Jianan Zhan, Zhaoyang Ye, and **Jennifer H. Elisseeff,** "Modular Multifunctional Poly(ethylene glycol) Hydrogels for Stem Cell Differentiation," *Advanced Functional Materials*, Online Sept 2012.

79. Wu I, Nahas Z, Kimmerling KA, Rosson GD, **Elisseeff JH.,** "An Injectable Adipose Matrix for Soft Tissue Reconstruction," *Plast Reconstr Surg*, 2012 Feb 9.

80. Hillel AT, Nahas Z, Unterman S, Reid B, Axelman J, Sutton D, Matheson C, Petsche J, **Elisseeff JH**. "Validation of a small animal model for soft tissue filler characterization," Dermatol Surg. 2012 Mar;38(3):471-8.

81. Jeannine M. Coburn, Matthew Gibson, Sean Monagle, Zachary Patterson, **Jennifer H. Elisseeff**, "Bioinspired

Nanofibers Support Chondrogenesis for Articular Cartilage Repair," *Proceedings of the National Academy of Sciences*, 2012 Jun 19;109(25):10012-7.

82. Unterman S, Gibson M, Lee JH, Crist J, Chansakul T, Yang EC, **Elisseeff J**. "Hyaluronic Acid-Binding Scaffold for Articular Cartilage Repair," *Tissue Eng Part A*. 2012 Jun 22.

83. Chang CY, Chan AT, Armstrong PA, Luo HC, Higuchi T, Strehin IA, Vakrou S, Lin X, Brown SN, O'Rourke B, Abraham TP, Wahl RL, Steenbergen CJ, **Elisseeff JH**, Abraham MR., "Hyaluronic acid-human blood hydrogels for stem cell transplantation," *Biomaterials* 2012;33(32):8026-33. PMID: 22898181

84. Qiongyu Guo, Xiaobo Wang, Mark W. Tibbitt, Kristi S. Anseth, Denise J. Montell, **Jennifer H. Elisseeff**, "Light activated cell migration in synthetic extracellular matrices," *Biomaterials* 2012;33(32):8040-6.

85. Calderón-Colón X, Xia Z, Breidenich JL, Mulreany DG, Guo Q, Uy OM, Tiffany JE, Freund DE, McCally RL, Schein OD, **Elisseeff JH**, Trexler MM., "Structure and properties of collagen vitrigel membranes for ocular repair and regeneration applications," *Biomaterials*, 2012 Nov;33(33):8286-95. PMID: 22920579

86. Deans TL, Singh A, Gibson M, **Elisseeff JH**., "Regulating synthetic gene networks in 3D materials," *Proc Natl Acad Sci U S A*., 2012 Sep 18;109(38):15217-22. PMID: 22927376

87. Simson J, Crist J, Strehin I, Lu Q, **Elisseeff JH**., "An orthopedic tissue adhesive for targeted delivery of intraoperative biologics". *J Orthop Res.* 2013 Mar; 31(3):392-400. PMID: 23097279

88. Sharma B, Fermanian S, Gibson M, Unterman S, Herzka DA, Cascio B, Coburn J, Hui AY, Marcus N, Gold GE, **Elisseeff JH**., "Human cartilage repair with a photoreactive adhesive-hydrogel composite". *Sci Transl Med* 2013 Jan 9; 5(167):167ra6. PMID: 23303605

89. Simson JA, Strehin IA, Lu Q, UY MO, **Elisseeff JH**., "An adhesive bone marrow scaffold and bone morphogenetic-2 protein carrier for cartilage tissue engineering". Biomacromolecules 2013 Mar11;14(3):637-43. PMID 23320412

90. Reid B, Gibson M, Singh A, Taube J, Furlong C, Murcia M, **Elisseeff J**., "PEG hydrogel degradation and the role of the surrounding tissue environment". *J Tissue Eng Regen Med* 2013 Mar 12 PMID 23495204

91. Zhan J, Singh A, Zhang Z, Huang L, **Elisseeff JH**., "Multifunctional aliphatic polyester nanofibers for tissue engineering". *Biomatter* 2012 Oct 1;2(4):202-12 PMID: 23507886

92. Hwang NS, Varghese S, Lee JH, Zhang Z, **Elisseeff J**., "Biomaterials directed in vivo osteogenic differentiation of mesenchymal cells derived from human embryonic stem cells". *Tissue Eng Part A* 2013 Mar 19 [Epub ahead of print] PMID: 23510052

93. Coburn JM, Bernstein N, Bhattacharya R, Aich U, Yarema KJ, Elisseeff JH., "Differential response of chondrocytes and chondrogenic-induced mesenchymal stem cells to C1-OH tributanoylated N-Acetylhexosamines". PLos One 2013;8(3):e58899 PMID: 23516573

94. Simson JA, Strehin IA, Allen BW, **Elisseeff J**., "Bonding and fusion of meniscus fibrocartilage using a novel chondroitin sulfate-bone marrow tissue adhesive". *Tissue Eng Part A* 2013 Mar 21 [Epub ahead of print] PMID: 23517453

95. **Elisseeff J**, Madrid MG, Lu Q, Chae JJ, Guo Q., "Future perspectives for regenerative medicine in ophthalmology". Middle East Afr J Ophthalmol 2013 Jan;20(1):38-45 PMID: 23580850

Inventions, Patents, Copyrights
See Appendix 1

Research Program Building/Leadership
Cell and Tissue Engineering Undergraduate Curriculum
TTEC, Translational Tissue Engineering Center

EDUCATIONAL ACTIVITIES

Books

"Scaffolding in Tissue Engineering" **JH Elisseeff** and P Ma (editors), Marcel Dekker, 2005.

"Stem Cells and Tissue Engineering," Song Li, Nicolas L'Heureux, and **J. Elisseeff** (editors), World Scientific Publishing, in press.

Book Chapters

1. **J. Elisseeff**, K. Anseth, W. McIntosh, and R. Langer, "Cogelation of Hydrolyzable Cross-Liners and Poly(ethylene oxide) Dimethacrylate and Their Use as Controlled Release Vehicles," *Intellingent Materials for Controlled Release*, ACS Symposium Series 728, Ch. 1, S. Dinh, J. DeNuzzio and A. Comfort (ed.), 1999.

2. S. Bryant, P. Martens, **J. Elisseeff**, M. Randolph, R. Langer, and K. Anseth , in *Chemical and Physical Networks: Formation and Control of Properties*, "Transtissue Photopolymerization of Poly(Vinyl Alcohol) Hydrogels," The Wiley Polymer Networks Group Review Series, Vol. 2, edited by B.T. Stokke and A. Elgsaeter (Wiley, New York, 1999) p.395.

3. **J. Elisseeff**, R. Langer and Y. Yamada, "Biomaterials for Tissue Engineering," in Tissue Engineering and Biodegradable Equivalents: Scientific and Clinical Applications. Lewandrowski, Wise, Trantolo, Gresser, Yaszemski and Altobelli, (ed), 2002.

4. **J. Elisseeff,** "Tissue Engineering", in McGraw-Hill, Yearbook of Science and Technology, 2004.

5. DA Wang and **J. Elisseeff,** "Photopolymerization," In *"Encyclopedia of Biomaterials and Biomedical Engineering" (EBBE)*, Wnek, G. E., Bowlin G. L., Eds; Marcel Dekker, Inc.: New York, 2004, p.1212-1225.

6. L. Lum and **J. Elisseeff,** "Injectable hydrogels for cartilage tissue engineering," In Ashammakhi N and Waris T (Eds.), Topics in Tissue Engineering. [ebook] http://www.tissue-engineering-oc.com

7. F, Yang, **J. Elisseeff**, "Cartilage Tissue Engineering," *Biomedical Engineering Handbook*, Tissue Engineering Section, 2006.

8. **J. Elisseeff,** TK Kim, M. Ruffner and CG Williams**, "**Cellular Photoencapsulation in Hydrogels," Chapter 9, in Culture of Cells for Tissue Engineering. Ian Freshney and Gordana Vunjak-Novakovic (ed), John Wiley and Sons, 2006.

9. Hwang, N., Varghese, S., and **Elisseeff, J**. "Cartilage Tissue Engineering: Directing Differentiation of Embryonic Stems Cells in Three-Dimensional Culture," Humana Press: Methods in Molecular Biology-Stem Cell Assays (in press).

10. Shah P, Hillel AT, **Elisseeff JH.** "Cartilage Tissue Engineering," *Principles of Regenerative Medicine*. Eds. Atala A, Lanza R, Thomson JA, Nerem RM. Philadelphia, Elsevier.

11. Hillel AT, Shah P, **Elisseeff JH**. "Hydrogels," *Biomedical Polymers*. Ed. Jenkins M. Cambridge, England, Woodhead.

12. Lee, H.J., Varghese, S., Hwang, N., **Elisseeff, J**., "Nanoengineered Hydrogels for Stem Cell Cartilage Tissue Engineering," *Micro- and Nanoengineering of the Cell Microenvironment: Technologies and Applications*, Artech House Publishing Inc.

13. Varghese, S. and **Elisseeff, J.H.**, "Hydrogels for Musculoskeletal Tissue Engineering," *Polymers for regenerative medicine*, 2006, 95-144.

14. Unterman SA, Marcus NA, **Elisseeff JH**. "Injectable polymers," Biodegradable polymers in clinical use and clinical development. Ed. Domb A, Kumar N, Ezra A. John Wiley and Sons, New Jersey. (in press)

15. Ashley Rothenberg, **Jennifer Elisseeff**. "Bone and Cartilage," in Tissue Engineering for the Hand: Research Advances and Clinical Applications. Editors: James Chang, M.D. and Gaurav Gupta, MSE. World Scientific Publishing (in press).

16. Jeannine Coburn, **Jennifer Elisseeff**. "Engineering cartilage: From materials to small molecules," Stem Cell and tissue Engineering. Ed. Song Li, Nicholas L'Heureux and Jennifer Elisseeff. World Scientific Publisher (in press).

Invited Reviews

1. **J. Elisseeff**, A. Lee, HK Kleinman, and Y. Yamada, "Biological Response of Chondrocytes to Hydrogels", *Annals of the New York Academy of Sciences*, 2002, 961:118-22.

2. **J. Elisseeff,** "Embryonic Stem Cells: More Potential for Impact", *Trends in Biotechnology*, 2004, 22(4):155.

3**. J. Elisseeff**, "Injectable Cartilage Tissue Engineering," *Expert Opinion on Biological Therapy*, 2004, 4(12):1849.

4. B. Sharma and **J. Elisseeff**, "Engineering structurally organized cartilage and bone tissues", *Annals of Biomedical Engineering*, 2004, 32(1):148-59.

5. **Elisseeff, J**. "Regenerating organized tissues and understanding cell-cell interactions," *FASEB J*, 2004, 18(4):A405-6.

6. Miles-Thomas J, **Elisseeff J**, Morales N, et al., "Human stem cells in a photopolymerizable hydrogel – The next generation of engineered tissue," *Journal of Urology*, 2004, 171(4):46.

7. **J. Elisseeff**, C. Puleo, F. Yang, and B. Sharma, "Advances in Skeletal Tissue Engineering with Hydrogels", *Orthod Craniofac Res*, 2005, 8(3):150.

8. **J. Elisseeff**, A. Ferran, S. Hwang, S. Varghese, Zijun Zhang, "The Role of Biomaterials in Stem Cell Differentiation: Applications in the Musculoskeletal System", *Stem Cells Dev*, 2006 Jun;15(3):295-303.

9. Hwang, NS, Varghese, S., and **Elisseeff, J**., "Controlled differentiation of stem cells," *Adv Drug Deliv Rev.*, 2008, 60(2):199-214.

10. **J Elisseeff**, "Hydrogels: structure starts to gel," *Nature Materials*, 2008, 7(4):271-3.

11. Moroni L, **Elisseeff JH**, "Biomaterials engineered for integration," *Materials Today*, 2008, 11(5):44-51.

12. Deans TL, **Elisseeff, JH**., "Stem Cells in Musculoskeletal Engineered Tissue." *Curr. Opin Biotechnology*. 2009 Oct;20(5):537-44.

13. Strehin IA, **Elisseeff JH**, "Characterizing ECM production by cells encapsulated in hydrogels," *Methods Mol Biol.* 2009;522:349-62.

14. Ambrose WM, Schein O, **Elisseeff J**., "A Tale of Two Tissues: Stem Cells in Cartilage and Corneal Tissue Engineering." *Curr. Stem Cell Res. Ther.* 2010, Mar;5(1);37-48.

15. Deans TL, and **Elisseeff, JH**., "The life of a cell: probing the complex relationships with the world," *Cell Stem Cell,* 2010 Jun 4;6(6):499-501.

16. Takezawa T, Fukuda M, McIntosh-Ambrose W, Ko JA, **Elisseeff J**, Haga S, Ozaki M, Kato K, Wang PC, Uchino T, Nishida T, "Development of novel cell culture systems utilizing the advantages of collagen vitrigel membrane," *Yakugaku Zasshi,"* 2010 Apr;130(4);565-74.

17. Hillel, AT., **Elisseeff, J**., "Embryonic Progenitor Cells in Adipose Tissue Engineering," *Facial Plast Surg.*, 2010 Oct;26(5):405-12.

Teaching

1. Tissue engineering (co-instructor Kevin Yarema)
(S03: 57, S04: 53, S05: 22, F05: 97, F06: 49, F07)

2. Cell and tissue engineering laboratory (organized laboratory and first course, currently teach 1st lecture and one lab module). Course runs now fall and spring semester with two sections each semester

3. Participating faculty, NIH-sponsored human embryonic stem cell training course (PI: Itskovitz-Eldor, Rao), 2004-present

4. F1000 Medicine, Faculty in Orthopedic Repair and Regeneration, 2005-present

5. Orthopedic Surgery, Resident training lecture in cartilage repair (2004)

Mentoring

Postdoctoral fellows

Trainee Name	Training Period	Prior Institution	Current Position
Shyni Varghese	2004-2007	Notre Dame	Assistant Professor, UCSD
Tae Gyun Kim	2001-2002	Seoul National University	Director of Orthopedics, SNU, Bundag Hospital
Christopher Williams	2001-2003	University of Virginia	Private Practice, Denver, Colorado
Myoung Soo Kim	2002-2003	Pusan National, South Korea	Fellow Johns Hopkins Cancer Center
Nerea Garagorri	2002-2004	University of Basque Country	Project Leader, INASMET, Spain
Hyun Bin Park	2003-2004	Gyeong-Sang National Univ	Assistant Professor of Orthopedic Surgery, Korea
Dong-an Wang	2002-2004	Zhejiang University	Assistant Professor, Nanyang Tech. Univ, Signapore
Zijun Zhang	2005-2007	China	Assistant Professor, Dept. of Orthopedics, St. Louis
Alexander Hillel	2005-2007	Dartmouth	Assistant Professor, Hopkins ENT
Virginia Saez Martinez	2005-2006	Spain	INASMET, Spain
Sara Ponce Marquez	2005-2006	Spain	INASMET, Spain
Zayna Nahas	2007-2009	Duke/JHU	Ophthalmology residency, Stanford
Lorenzo Moroni	2007-2008	University of Twente	Twente, Orthopedic Lab
Zhaoyang Ye	2007-2009	Zhejiang University	State Key Laboratory of Bioreactor Engineering, Shanghai
Lisa Capriotti	2008-2009	University of Delaware	Military
Louis Chang	2008-2009	University of Maryland	Neurosugery residency
Marcos Garza-Madrid	2011-2012	Tecnologico de Monterrey	Professor, Watertown, WI
Qiongyu Guo	2009-present	Case Western	Current
Tara Deans	2009-present	Boston University	Current
Anirudha Singh	2009-present	University of Ohio, Akron	Current
Jemin Chae	2009-present	Seoul National University	Current
Vince Beachley	2011-present	Clemson University	Current
Chaekyu Kim	2012-present	University of Massachusetts	Current

Predoctoral

H. Janice Lee	2003-2007	Cornell	Georgetown Law School
Blanka Sharma	2002-2006	Univ of Waterloo	Director of Research, Cartilix Inc., CA
Qiang Li	2002-2004	Bejing University	Endoclens, JNJ
Fan Yang	2002-2007	Shanghai Jiaotong	Assistant Professor, Stanford
Suk Yeon Hwang	2001-2007	Johns Hopkins	Postdoc, MIT
Winnette McIntosh-Ambrose	2003-2009	MIT	Postdoc. NIH (NEI)
Ashley Rothenberg	2006-2011	MIT	Beckdon Dickenson, NJ
Branden Reid	2006-2012	Morgan State University	FDA, Bethesda, MD
Iossif Strehin	2005-2011	Northwestern	Postdoctoral Fellow at Northwestern University
Hanwei Li	2004-2009	MIT	Scientific Specialist at Abcam, San Francisco Bay Area
Jeanine Couburn	2006-2012	UMass Amhurst	Postdoctoral Research Associate at Tufts University
Matt Gibson	2007-2013	West Virginia University	Med Student, Johns Hopkins Hospital
Shimon Unterman	2006-2012	Northwestern	Biomedical Engineer, Boston area
Jake Simpson	2008-present	MIT	Current
Iwen Wu	2009-present	UCSD	Current
Annemarie McCartney	2012-present	JHMI	Current
Qiaozhi Lu (Nicole)	2010-present	Zheijang University	Current
Kenneth Estrellas	2012-present	Brown University	Current
Amy Anderson	2012-present	Univ. California, Davis	Current

Masters

Afrah Salahuddin	2004-2007	Johns Hopkins	Medtronics
Richard Thilbault	2004-2006	Johns Hopkins	PhD Candidate Rice
Leon Lum	2001-2003	UCSD	USPTO/Georgetown Law School
Sara Fermanian	2002-2006	Univ of Missouri	Cartilix Inc.
Angela Ferran	2003-2005	University of Maine	Maine, Dept of Environment
Vanessa Capanzano	2004-2007	Stonybrook	General Electric
Pat Sampattawanich	2006	Johns Hopkins	PhD Student MIT
Kristen Haldeman	2006-2008	Univ. of Connecticut	Industry
Nimra Taqi	2007-2009	Georgia Tech	Patent Company
Noel Davison	2007-2009	University of Florida	Progentix, Ultrech, Netherlands
Dan Mulreany	2008-	Johns Hopkins	Johns Hopkins, APL
Tracy Yuanfan Zhang	2008-present	Zheijang University	
Joshua Crist	2009-2011	Johns Hopkins	
Shoumyo Majumdar	2012-present	R.V. College of Engineering, Bangalore, India	Current
Peter Li	2012-present		Current
Michael Corvelli	2012-present		Current
Jessica Yang	2012-present		Current
Sandhya Ramesh	2012-present	Texas A&M University, TX	Current

Thesis committees (multiple, not recorded)

CLINICAL ACTIVITIES

Two technologies developed in the laboratory have been translated to clinical testing (in collaboration with startup companies); Chondux (cartilage repair device) and ATX-104 (photofiller for soft tissue reconstruction).

ORGANIZATIONAL ACTIVITIES

Selected Institutional Administrative Appointments

Graduate Education Committee (2009), ESCRO review committee (2009-current), Stem Cell Bioethics Group (2009), Young Inventor's International Advisor Canada (2003-present), Chair of Academic panel for HST 35th Reunion (2004), Hopkins Biotech Network Advisory Board (2004), High School Internet Science and Technology Fair Advisor (2003), Baltimore Poly High School women serious about science and mentoring program (2002-present), Vice Chair, Tissue Characterization, ASTM Tissue Engineered Medical Products Standards (2002) Member of Harvard-MIT Division of Health Sciences and Technology, Admissions and Graduation Committee (1997, 1998)

Editorial Activities

Journal Reviews: Biomacromolecules, Biomaterials, FASEB J, J of Dental Research, Tissue Engineering, ASTM, Pharmaceutical Research, PNAS, Annals of Biomedical Engineering, Nature Biotechnology, Journal of Polymer Science, Acta Biomateriala, Journal of the American Chemical Society, Nature, Science

Tissue Engineering (Editorial Board 2005-2009)
International Journal of Medical Implants and Devices (2005)

Selected Advisory Committees and Community Service

2001	NIH Study Section, Regenerative Medicine Special Emphasis Panel
2001	American Chemical Society, Co-Chair, Polymeric Biomaterials for Tissue Engineering Session, Chicago
2002	NASA Biomaterials Review Study Section
9/2002	NIH Study Section, Surgery and Biotechnology, Ad hoc
11/2002	NIH Study Section, Regenerative Medicine Special Emphasis Panel
2003	NIDCR-RFA, NIH Special Study Section
2003	Department of Health and Human Services, Workshop on Tissue Engineering and Regenerative Medicine, Washington DC
2003	Biomaterials Tissue Engineering, Cold Spring Harbor Conference, Session Chair, Tennessee
2003	NSF SBIR Study Section
2003	NEI Study Section
2003	AIBS, army review and site visit
8/2003	NIBIB Advanced Biomaterials Study Section
2003	Cryolife, Inc. Advisory Panel, Atlanta, Georgia
2004	Biomedical Engineering Society, Orthopedic Tissue Engineering, Philadelphia, Session Chair
2004	Biomedical Engineering Society, Enabling Technologies in Tissue Engineering, Philadelphia, Session Chair
2004	AIChE Annual Meeting, Session Chair
2004	Biomedical Engineering Society Meeting, Austin Texas, Chair, Stem Cells in Tissue Engineering
2004	Pennsylvania Greenhouse Fund, Connecticut Innovations, Reviewer
2004	(NSERC) Natural Sciences and Engineering Research Council of Canada
2003, 2004	NIH, Career Development Awards and T32 Institutional Training Grants Review,
2004	Singapore Biomedical Research Council, Grant reviewer
2004, 2005	NIDCR, NIBIB Advanced Materials Special Study Section, Training Grant Study and Section, Special Study Section
2004, 2005	NIDCR, NIBIB Advanced Materials Special Study Section, Training Grant Study and Section, Special Study Section
2005	NIDCR, Special Emphasis Panel – Bone
2005	BMES, Chair, Tissue Engineering Track (with Dave Mooney)
2006	Polytechnique, Stem Cell Workshop, Site Visit, NSERC Industrial Chair
2006	Biomedical Engineering Society, Education Committee Nominee
2006	Skeletal Biology Study Section, Ad hoc reviewer
2007	DoD Review Panel
	AAAS-National Academy of Engineering Ohio Awards

	Canadian research chair evaluation team
	ad hoc NIH Nanotechnology Panel
6/2007	NIH Quantum Grant Review
4/2007	AIBS, New Jersey Stem Cell Grant Review
5/2007	NIAMS, Musculoskeletal Program Project Review
2008-2012	NIH Study Section BMBI Standing Member
2009	Multiple NIH ad hoc review panels
2009	NSERC Awards Review Committee, Canada
2009-10	AIMBE Election Committee
2009-current	BMES Awards Committee
2009-10	TATRC PLR Panel

Professional Societies

Biomedical Engineering Society, Materials Research Society, American Association for the Advancement of Science, Orthopedic Research Society, American Chemical Society, International Society for Stem Cell Research

Consultantships

SAB Member, Kythera Biopharmaceuticals, CA
CoFounder and Consultant, Cartilix, Inc., San Carlos, CA (2004-2009)
SAB Member, Bausch and Lomb, Rochester, NY (Pharmaceutical and Vision Care Boards)
SAB Member, CBI Cellular Bioengineering Inc., Honolulu, HA
CoFounder, Aegeria (2009-)

RECOGNITION

Awards, Honors

Recipient of the Warner Prize for Juniors in Chemistry, 1993
Monteverdi Award for top female student in Mellon College of Science, 1994
Pittsburgh Society of Analytical Chemists University Award, 1994
Whitaker Scholarship to attend 42nd American Society for Artificial Organs Meeting, May1996,
Whitaker Scholarship to attend the International Society of Internal Organs, May, 1997, Providence, RI
Pharmacology Research Associate Fellow, NIGMS, 2000
Arthritis Investigator Award, Arthritis Foundation, 2001
TR100 Honoree (Technology Review Magazine) top 100 innovators under age 35, 2002
TR10 Honoree: Ten Technologies that will change the future (Technology Review Magazine), 2003
Nominated to World Technology Network, Medicine Category, 2003
Young Alumni Award, Carnegie Mellon, 2003
Society for Physical Regulation in Biology and Medicine, Iwao Yasuda Award, 2005
Elected Fellow of American Institute of Medical and Biological Engineering (AIMBE), 2009
Young Global Leader, The World Economic Forum, 2008-2013

Invited talks, Panels

1. *Hydrogels for Cartilage Repair*, Hospital for Special Surgery Orthopaedics Seminar, New York, 1997

2. *Advances in Hydrogels*, Advanced Tissue Sciences Scientific Advisory Board Meeting, San Diego, 1997

3. Plastic Surgery Grand Rounds, Massachusetts General Hospital, Boston, Massachusetts, 1998

4**.** *PEG Hydrogels*, Advanced Tissue Sciences, San Diego, California, 1998, 2002

5. *Hydrogels and Cartilage Tissue Engineering*, NIH Tissue Engineering Workshop, Bethesda, Maryland June 1998, May 2000

6. *Engineering Tissue Replacements*, American Society for Anaplastology, Washington D.C., May, 2000

7. *Hydrogels and Cartilage Tissue Engineering*, Tissue and Genetic Engineering in Arthritic Diseases,

Knowledge Foundation Conference, Boston, MA, September, 2000

8. *Cartilage Repair,* Orthopedic Surgery Ground Rounds, Johns Hopkins University, Baltimore, February 2001

9. *Biomaterials and Cartilage Tissue Engineering,* Medical University of South Carolina Symposia, Charleston, South Carolina, December 2001

10. George Mason University, Manassas, Departmental Seminar, 2001

11. *Cartilage Tissue Engineering,* Department of Biomedical Engineering, University of Illinois, Chicago, *2001*

12. *Biomaterials and Tissue Engineering,* Medical Design and Manufacturing Conference, Minneapolis, Minnesota, September, 2002

13. *Biomaterials and Tissue Engineering,* Medical Design and Manufacturing Conference, Anaheim, CA September, 2002

14. *Musculoskeletal Tissue Engineering and Photopolymerizing Hydrogels,* Tissue Engineering, Cold Spring Harbor Laboratory, New York, November, 2002

15. *Musculoskeletal Tissue Engineering,* Bone Tissue Engineering Center (BTEC), Carnegie Mellon University, Pittsburgh, Pennsylvania, Seminar, 2002

16. *Cartilage Tissue Engineering,* Centro Nacional de Rehabilitacion, Instituto de Ortopedia, Grand Rounds, Mexico City, Mexico, 2002

17. *Cartilage Tissue Engineering,* Department of Biomedical Engineering Seminar, University of California, San Diego, 2002

18. *Biomaterials and Tissue Engineering,* Osiris Therapeutics, Baltimore, MD, January 2003

19. *Biomaterials and Tissue Engineering,* Cibavision, Atlanta, Georgia, February, 2003

20. *Biomaterials and Tissue Engineering,* Bausch and Lomb, Rochester, New York, May, 2003

21. *Biomaterials and Tissue Engineering,* Tissue Engineering Group, UC Berkeley, CA, June, 2003

22. *Tissue Engineering,* Bruce Mau Design and Exhibition, Canada (teleconference), June 2003

23. *Biomaterials and Tissue Engineering: towards a simplified minimal invasive cartilage repair strategy,* Genzyme Biosurgery, Boston, Massachusetts, September, 2003

24. *Skeletal Tissue Engineering***,** First Annual Meeting of the Tissue Engineering Society of Mexico, Mexico, September, 2003

25. *Tissue engineering: from basic science to clinical application,* Department of Chemistry, Carnegie Mellon University, Pennsylvania, October, 2003

26. *Injectable Cartilage Tissue Replacement,* Georgetown University Biotech Forum, Washington DC, October**,** 2003

27. *Biomaterials for Joint Injury,* Sarnoff Corporation**,** Princeton, New Jersey, November, 2003

28. *Title,* Carnegie Institute, Baltimore, Maryland, MONTH, 2003

29. *Musculoskeletal Tissue Engineering and Photopolymerizing Hydrogels,* Medtronics-Sofamor, Danek, Tennessee, 2003

30. Department of Biomedical Engineering Seminar, Yale University, New Haven, Connecticut, January, 2003

31. *Biomaterials and tissue engineering,* Center for Talented Youth, Johns Hopkins University, Baltimore, MD, 2003

32. Department of Pharmaceutical Sciences, University of Illinois, Chicago, October, 2003

33. *Tissue Engineering; From Basic Science to Clinical Application* , Center for Regenerative Medicine, University of Pittsburgh, Pennsylvania, February, 2004

34. *Hydrogels and Tissue Engineering,* Washington Academy of Biomedical Engineering, Howard University,

Washington DC, February, 2004

35. *Tissue Engineering: From Basic Science to Clinical Applications* Department of Biomedical Engineering, University of Michigan, February, 2004

36. *Tissue Engineering; From Basic Science to Clinical Application,* Department of Chemical Engineering, Princeton University, New Jersey, March, 2004

37. *Biomaterials and Tissue Engineering,* IX Cell Culture Engineering, Stem cells and Tissue Engineering, Cancun, Mexico, March, 2004

38. *The Renaissance of Tissue Engineering,* Hopkins Today, Los Angeles and San Francisco, March, 2004

39. *Engineering Organized Structures,* Experimental Biology Regeneration Symposium, Washington, DC, April, 2004

40. *Tissue Engineering: From Basic Science to Clinical Applications,* UVA Biotechnology Symposium, Charlottesville, Virginia, May, 2004

41. *Tissue Engineering,* INASMET Foundation, San Sebastian, Spain, July, 2004

42. *Scaffold and Stem Cell Interactions in Musculoskeletal Tissue Engineering,* Gordon Conference on Signaling in Artificial Extracellular Matrices, Bates College, Maine, July, 2004

43. *Minimally Invasive Technologies for Craniofacial Repair,* COAST (Conferences on Orthodontic Advances in Science and Technology), Asilomar, Pacific Grove, California, August, 2004

44. *Tissue Engineering: From Basic Science to Clinical Applications,* Second Annual JHU-Technion Symposium, Haifa, Israel, October, 2004

45. *Tissue Engineering: From Basic Science to Clinical Applications,* 3rd Annual Meeting on Joint Preservation, Ocean City, Maryland, October, 2004

46. *Tissue Engineering: From Basic Science to Clinical Applications,* Tufts University/Medical School, Program in Cellular and Molecular Physiology, Boston, MA October, 2004

47. *Making Tissue and Organs: Nanotechnology and how it may change your life,* Center for Talented Youth, Johns Hopkins University, Baltimore, Maryland, November, 2004

48. *Tissue Engineering: From Basic Science to Clinical Applications,* Department of Chemical Engineering and Biomedical Engineering, Cornell University, Ithaca, New York, September, 2004

49. *One tissue at a time: bioengineering a cure,* New England Chapter of Hopkins Alumni Dinner, Boston, Massachusetts, December, 2004

50. *Bioengineering Tissues on Demand using Innovative Materials Science,* BioAgenda Think Tank, Palm Springs, California, December, 2004

51. *Hydrogels and Skeletal tissue Engineering,* Wake Forest Institute for Regenerative Medicine, *Greensboro, North Carolina,* December, 2004

52. *Tissue Engineering: From Basic Science to Clinical Applications,* Johns Hopkins ENT Surgery Grand Rounds, Baltimore MD, December, 2004

53. *One tissue at a time: bioengineering a cure,* Johns Hopkins Alumni Luncheon, Baltimore, Maryland, Spring, 2004

54. Interwest Life Sciences Advisory Committee Meeting, Miami, Florida, March 2005

55. *Materials for Tissue Repair,* Materials at the Synthetic-Biological Interface Symposium, Polymer Science and Engineering, University of Amherst, May 2005

56. Cartilage tissue engineering: From basic science to clinical application, Department of Biomedical Engineering Seminar Series, Columbia University, April 2005

57. *Stem cells in hydrogels,* Society for In vitro Biology, Baltimore, MD, June 2005

58. *Cartilage Tissue Engineering: Organization and Integration*, Tissue Engineering:The Next Generation, Cambridge, MA, May 2005

59. *Cartilage Tissue Repair,* 2nd Annual Aegean Conference on Tissue Engineering, Crete, Greece, May 2005.

60. *Photopolymerizing Hydrogel for Tissue Engineering,* Second International Workshop on Bioprinting, Biopatterning, and Bioassembly, Medical University of South Carolina, Charleston, SC, March 2005.

61. *Hydrogels and Tissue Engineering,* University of Leuven, Belgium, July 2005.

62. *Hydrogels and Tissue Engineering,* Nektar Therapeutics, Huntington, Alabama, July 2005.

63. *Grantees Meeting,* NIBIB, Washington DC, August 2005.

64. *Stem cells and hydrogels,* Society for Physical Regulation in Biology and Medicine, Cancun Mexico, January, 2006

65. *Musculoskeletal Tissue Engineering,* Stanford University, Department of Orthopedic Surgery, December 2005

66. Tissue Engineering: applications of hydrogels and photopolymerization, Bekton-Dickinson, Sparks, Maryland, October 2005.

67. *Cartilage Tissue Repair,* Union Memorial Hospital, Department of Orthopedic Surgery, July 2005.

68. *Tissue engineering: from biomaterials to stem cells,* University of Pennsylvania, Department of Biomedical Engineering, February 2006.

69. *Hydrogels in Cartilage Repair,* Arthritis Research Conference, Stone Mountain, Georgia, June 2005.

70. *Tissue engineering: from biomaterials to stem cells,* Department of Biomedical Engineering, IGERT Seminar, University of Texas, Austin, February 2006.

71. *Tissue engineering in Craniofacial Disease and Repair,* Mesenchymal stem cell and skeletal biology symposium, UCSF, San Francisco, March 2006.

72. *Hydrogels for Cartilage and Bone Repair,* Expert Tissues Workshop on Cellualr Aspects of Tissue Engineering, Vienna, Austria, March 2006.

73. *Tissue Engineering,* University of Oklahoma, April 2006.

74. *Tissue Engineering,* University of Ottawa, May 2006.

75. *Tissue engineering: from stem cells to biomaterials,* Boeing Inaugural lecture, George Mason University, Fairfax, Virginia, June 2006.

76. *Embryonic stem cells in musculoskeletal tissue engineering,* Summer Bioengineering Conference, Amelia Island, Florida, June 2006

77. *Scaffolds and stem cells as delivery vehicles for tissue engineering,* International Society for Controlled Release, Vienna, Austria, July 2006

78. *Tissue engineering: from biomaterials to stem cells,* Rizzoli Orthopedics Institute, Bologna, Italy, July 2006

79. *Tissue Engineering in Repair and Disease,* Fifth Annual Skeletal, Craniofacial, and Oral Biology Symposium, University of Connecticut, June 2, 2006

80. *Spinouts from BME,* Biomedical Engineering Society Annual Meeting, Chicago, IL, October 2006.

81. *Biomaterials, stem cells, and tissue repair,* DuPont Corporate Research, October 4, 2006, Delaware.

82. *Biomaterial regulation of stem cell differentiation,* Cellular and Molecular Treatments of Neurological Disorders, September 29 2006, Boston, MA.

83. *Applications of chemistry in controlling cell function and tissue engineering,* Department of Chemistry, University of Delaware, September 20, 2006, University of Delaware.

84. Keck Futures Initiative, Smart Prosthetics, National Academies, November 2006, Irvine, CA.

85. *Tissue engineering in repair and disease,* 5th Annual Skeletal, Craniofacial, and Oral Biology Symposium,

Keynote Speaker, June 2006, University of Connecticut.

86. *Biomaterial regulation of stem cell differentiation,* Cellular and molecular treatments of neurological disorders, Cambridge, MA, September 2006.

87. *Biomaterials, stem cells, and tissue repair,* DuPont Seminar Series, Delaware, October 2006.

88. *Poster,* Keck Futures Initiatives, Smart Prosthetics, Orange County, California, November 2006.

89. *Biomaterials and tissue engineering laboratory,* Institute of BioNanoTechnology, Singapore, December 2006.

90. *Biomaterials, stem cells, and tissue engineering,* Indo-US science and technology forum workshop, Bangalore, India, February 2007.

91. *Musculoskeletal Repair: cells and materials,* Hilton Head Tissue engineering and regenerative medicine workshop, March 2007.

92. *Biomaterials, stem cells, and tissue engineering,* University Medical Center, Utrecht, Holland, April 2007.

93. *Synthetic composite materials and stem cells.* Gordon Conference, Holderness, New Hampshire, July 2007.

94. NIBIB Symposium, Washington DC, June 2007.

95. *Biomaterials in Orthopedic Regenerative Medicine,* FDA, Maryland, April 2007

96. *Musculoskeletal tissue engineering,* American Chemical Society, Hermann Mark Award Symposium for Robert Langer, Boston, Massachusetts, August, 2007.

97. *New scaffolds in orthopedics,* International Cartilage Repair Society, Warsaw, Poland, September 2007.

98. *An orthopedic adhesive,* Department of Orthopedics, Salt Lake City, August 2007.

99. *Biomaterials, stem cells, and tissue repair,* GE Global Research, Rochester, New York, July 2007.

100. Attendee, Keck Initiatives on Smart Prosthetics, National Academy of Engineering, UC, Irvine

101. *Tissue engineering – a perspective on translating research to patients,* Japan-US Frontiers of Engineering Symposium, National Academy of Engineering, Hewlett-Packard, San Jose, California, November 2007.

102. *Engineering repair: from biomaterials to stem cells,* Department of Chemical Engineering, Lafayette College, Lafayette, Pennsylvania

103. *New Strategies in Orthopedics,* Washington Orthopedic Surgery Course, November, 2007

104. *Musculoskeletal tissue engineering,* Department of Biomedical Engineering, University of Maryland, November 2007.

105. *1.) Biomaterials in Plastic Surgery and 2.) Stem cell in Plastic Surgery,* Brazilian Society for Plastic Surgery, Curitiba, Brazil, November 2007.

106. *Smart Materials, Smart Regeneration,* Engineering Life Symposium, Dresden, Germany, December 2007.

107. *Adult and embryonic stem cells in musculoskeletal repair,* AIChE Stem Cell Symposium, Coronado Island, CA, January 2008.

108. *Musculoskeletal Regeneration: from stem cells to biomaterials,* New Jersey Institute of Technology, February, 2008.

109. *Regeneration in the musculoskeletal system,* Food and Drug Administration, Maryland, February 2008.

110. *Musculoskeletal Regeneration: from stem cells to biomaterials,* Department of Biomedical Engineering, University of Utah, March 2008.

111. *Musculoskeletal Regeneration: from stem cells to biomaterials,* Tsinghua University and Hangzhou University, China, April 2008.

112. Johnson and Johnson, New Jersey, April 2008.

113. *Translating musculoskeletal regeneration,* Texas A&M University, College Station, Texas, May 2008.

114. *Multifunctional materials: learning from biology,* US-European Joint Workshop, Sicily, Italy, June 2008.

115. *Engineering in the normal and diseased musculoskeletal system,* Gordon Research Conference, July 2008.

116. Technology Review EmTech Panel on Regenerative Medicine, MIT, Cambridge, MA, September 2008.

117. Danish Royal Society of Rheumatologists, Denmark, September 2008.

118. Department of Chemical Engineering, Syracuse University, New York, October 2008.

119. *Biomaterials for musculoskeletal repair and guiding stem cells,* Keynote Lecture, Philadephia Spine Society, November, 2008.

120. *Future of Tissue Engineering,* AO-North America Craniofacial Course, March 2009.

121. Adhesion Gordon Conference, Summer 2009.

122. Collagen Gordon Conference, Summer 2009.

123. University of Alabama, Birmingham, AL, September 2009.

124. University of Kansas, October 2009.

125. Case Western Reserve University, November 2009.

126. *Translational tissue engineering,* Wake Forest Institute of Regenerative Medicine, November, 2009.

127. *Translational tissue engineering,* University of California-Davis, December, 2009.

128. *Translational tissue engineering,* Rensselaer Polytechnic University, February, 2010.

129. *Translational tissue engineering,* Case Western University, Center for Stem Cells and Regenerative Medicine, March, 2010.

130. *Biomaterials in repair and reconstruction of the cornea,* Cornea Gordon Conference, Ventura, California, March 2010.

131. *Translational tissue engineering,* University of Virginia, April, 2010.

132. *Tissue engineering and the craniofacial system,* Gordon Research Conference, Il Ciocco, Italy, April 2010.

133. *Translational tissue engineering,* Department of Biomedical Engineering, University of Minnesota, April, 2010.

134. *Translational Tissue Engineering,* Ecole Polytechnique, Montreal, Inaugural Endowed Pierre Carreau Lecture, May 2010.

135. *Stem cells: intelligent delivery systems and tissue builders,* Controlled Release Society Meeting, Portland, Oregon, July 2010.

134. 10^{th} NJ Symposium on Biomaterials Science, New Jersey, October 2010.

135. TERMIS, Orlando, Florida, December 2010

136. FDA, Rockville, MD, December 2010