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EDUCATION:

September 2001- April 2005 **Massachusetts Institute of Technology (MIT)**
Ph.D. in Bioengineering
- PhD Thesis: "*Nanoscale and microscale approaches for engineering the in vitro cellular microenvironment*"; Supervisor: Robert Langer
- Cumulative GPA: 5.0/5.0

September 1999- August 2001 **University of Toronto (U of T)**
M.A.Sc. in Chemical Engineering and Applied Chemistry in Collaboration with Institute of Biomaterials and Biomedical Engineering (IBBME)
- Masters Thesis: "*In vitro study of bone marrow derived progenitor cells in liver-like microenvironments*" ; Supervisor: Peter Zandstra and Michael Sefton

September 1995- May 1999 **University of Toronto**
B.A.Sc. in Chemical Engineering and Applied Chemistry and Collaborative Program in Environmental Engineering (graduated with honors)
- Undergraduate Thesis: "*A novel method to conformally coat mammalian cells using magnetically driven beads*"; Supervisor: Michael Sefton
- Cumulative Average, 1996-99: 88% (4th year average: 93% - rank: 2 of 73)

September 1990- June 1995 **Jarvis Collegiate Institute**
Ontario Secondary School Diploma (Ontario Scholar)

RECENT AWARDS AND HONORS:

- BMW Group Scientific award "Passion for Innovation"- 2007
- TR35 – Technology Review Top Young Innovator award – 2007
- Ignited Minds Undergraduate Mentoring Award - 2007
- Coulter Foundation Early Career Award - 2006
- OMNOVA/MIT Program for Polymer Science and Technology - OMNOVA Solutions Signature University Award for Outstanding contribution to Polymer-related Research- 2005
- Biomedical Engineering Society Outstanding Graduate Student Award – 2005
- 1st prize presentation at the Current Progress in Tissue Engineering Conference – 2005 (with 5 others)
- MIT – Patrick J. McGovern, Jr. Award for significant impact on the quality and overall spirit of entrepreneurship at MIT 2005 (with 6 others)
- Poitras pre-doctoral fellowship, 2004-2005
- MIT's Outstanding Undergraduate Research Mentor, 2004
- Keystone Symposia Conference Travel Scholarship: Stem Cells, 2004
- MIT – Graduate Program of the Year, Techlink, 2004 (with 3 others)
- NSERC - Post Graduate Scholarship B, 2001-2003
- MIT - Post Graduate Fellowship (BEH), 2001-2002
- IBBME Scientific Day Symposium Best Poster Presentation – 2001
- Commonwealth Scholarship tenured at Cambridge University, UK (declined), 2001-2004
- NSERC - Post Graduate Scholarship A, 1999-2001
- Centennial Thesis Award - For Excellence in Chemical Engineering Undergraduate Thesis, 1999
- Governor General's Canada Scholarship in Environmental Engineering, 1998-99
- Shell Canada Ltd. Engineering Scholarship, 1998-99

- Summer Biomedical Engineering Undergraduate Research Fellowship, 1998
- Ardaugh Scholarship, 1997-98
- Six time Dean's Honors List Scholar, 1996-99
- Three time member of the Dean's Circle, 1996-99

RESEARCH EXPERIENCE:

May 2006- **Assistant Professor of Health Sciences and Technology**
Division of Health Sciences and Technology (HST)
Massachusetts Institute of Technology
Harvard University

May 2006- **Assistant Professor of Medicine**
Department of Medicine
Harvard Medical School

July 2005- **Associate Bioengineer**
Brigham and Women's Hospital

July 2005- **Instructor of Medicine and Health Sciences and Technology**
April 2006 ***Harvard-MIT Division of Health Sciences and Technology***
Brigham and Women's Hospital; Harvard Medical School

May 2005- **Postdoctoral Associate**
April 2006 ***Harvard-MIT Division of Health Sciences and Technology***
MIT, *Prof. R. Langer*

June 2002- **Research Assistant**
April 2005 ***Division of Biological Engineering,***
MIT, *Prof. R. Langer*

September 1999- **Research Assistant**
August 2001 ***Department of Chemical Engineering and Applied Chemistry,***
Institute of Biomaterials and Biomedical Engineering
University of Toronto, *Prof. P.W. Zandstra and Prof. M.V. Sefton*

May 1998- **Research Assistant**
August 1999 ***Department of Chemical Engineering and Applied Chemistry,***
University of Toronto, *Prof. M.V. Sefton*

TEACHING EXPERIENCE:

Spring 2007- **Course director for HST.590 "Emerging topics in biomedical engineering"**
Harvard-MIT HST

Spring 2007- **Associate course director for HST.521 "Biomaterials and tissue engineering in medical devices and artificial organs"**
Harvard-MIT HST

Fall 2002- **Research mentor**
Harvard-MIT HST, Harvard Medical School

Fall 2002- **Undergraduate research mentor**
Harvard-MIT HST, Harvard Medical School
MIT*, Prof. R. Langer*

Fall 2002	**Teaching Assistant for BE.217 Perspectives in Biological Engineering** ***MIT**, Prof. D. Lauffenburger and Prof. P. Matsudaira*
Spring 2000-2001	**Teaching Assistant for CHE 123 Engineering Biology** ***Department of Chemical Engineering and Applied Chemistry, University of Toronto,** Prof. M.V. Sefton*
Fall 1999-2000	**Teaching Assistant for CHE/EDV 430 Plant Design** ***Department of Chemical Engineering and Applied Chemistry, Division of Environmental Engineering, University of Toronto,** Prof. M. Thomson*
May 1999-September	**Course Co-designer for CHE123 Engineering Biology** ***Office of the Dean, University of Toronto***
Spring 1999	**Course Co-designer for Tissue Engineering** ***University of Toronto,** Prof. K.A. Woodhouse*

PUBLICATIONS:

Books:

1. **A. Khademhosseini**, M. Toner, J. Borenstein, S. Takayama. "Micro and Nanoenginernig of the cellular microenvironment: Applications and Technologies" Artech House Publishing, USA (In press).

2. **A. Khademhosseini**, M. Zourob, K.Y. Suh. "Biological microarrays" Humana Press, USA (In preparation).

Journals Articles:

Submitted

1. M. Brigham, A. Bendali, A. Bick, **A. Khademhosseini**. "Collagen and hyaluronic acid - interpenetrating networks with enhanced mechanical and biological properties" (In preparation).

2. P. Panda, S. Ali, E. Lo, B.G. Chung, T.A. Hatton, **A. Khademhosseini**, P.S. Doyle "Cell-laden hydrogel microblocks generated by using stop-flow lithography." (In preperation).

3. S. Jinno, H.-C. Moller, C.L. Chen, B. Rajalingam, B.G. Chung, **A. Khademhosseini**. "Multilayer parylene stencils for controlling the cell microenvironment" (Submitted).

4. S. Moon, R.L. Lin, N.G. Durmus, A.E. Emrehan, E. Kayaalp, **A. Khademhosseini**, E. Hæggstrom, U. Demirci. "Recent Patents on Nanofluidic Channels and Structures" (Submitted).

5. A. Manbachi, S. Shrivastava, M. Cioffi, B.G. Chung, M. Moretti, U. Demirci, M. Yliperttula, **A. Khademhosseini**. "Computational and experimental study of the influence of shear stress on cell distribution in microfluidic channels" (Submitted).

6. R.L. Lin, G. Montesano, G. Lee, G. Durmus, S. Moon, E. Kayaalp, **A. Khademhosseini**, E. Hæggström, U. Demirci. "Creating and Perfusing 3D Tissue Constructs" (Submitted).

7. W. Sun, **A. Khademhosseini**, E. Beniash. "Effects of amorphous calcium phosphate/hyaluronic acid composites on cell adhesion and proliferation *in vitro*" (Submitted).

8. H. Hosseinkhani, M. Hosseinkhani, T. Azzam, A.J. Domb, **A. Khademhosseini**. "Gene therapy for bone tissue engineering using cationized dextran as non-viral gene carrier and collagen sponge as scaffold" (Submitted).

9. H. Hosseinkhani, M. Hosseinkhani, T. Azzam, A.J. Domb, **A. Khademhosseini**. "Genetically engineered mesenchymal stem cells enhance in vivo bone regeneration" (Submitted).

10. B. Murtuza, R. Langer, **A. Khademhosseini**. "Microscale technologies to rebuild the heart: from stem cells to tissues" (Submitted).

11. C.M. Hwang, **A. Khademhosseini**, K. Sun, S.H. Lee. "Microfluidic chip-based fabrication of PLGA microfiber scaffolds for tissue engineering" (Submitted)

2007

12. S. Selvarasah, S.H. Chao, C.-L. Chen, S. Sridhar, A. Busnaina, **A. Khademhosseini**, M.R. Dokmeci. "A reusable high aspect ratio parylene-C shadow mask technology for diverse micropatterning applications" *Sensors and Actuators A: Physical* (In press).

13. B.A. Teply, R. Tong, S.Y. Jeong, G. Luther, I. Sherifi, C.H. Yim, **A. Khademhosseini**, O.C. Farokhzad, R. Langer, J. Cheng. "Charge-Coupled Polymeric Microparticles and Micromagnets Allow External Modulation of the Bioavailability of Orally Delivered Macromolecules" *Biomaterials* (In press).

14. B.G. Chung*, L. Kang*, **A. Khademhosseini**. "Micro- and nanoscale technologies for tissue engineering and drug discovery applications" *Expert Opinion on Drug Discovery* (In press).

15. H.-C. Moller, M. Mian, S. Shrivastava, B.G. Chung, **A. Khademhosseini**. "A microwell array system for stem cell culture: Effects of material properties and cell seeding density" *Biomaterials* (In press).

16. T. Cheng, V. Yadav, S. De Leo, A. Mohadas, D. Wright, Y. Ling, S. Selvarash, M.R. Dokmeci, **A. Khademhosseini**. "Cell and protein compatibility of parylene-C membranes" *Langmuir* (In press).

17. L. Kang*, B.G. Chung*, R. Langer, **A. Khademhosseini**. "Microfluidics for Drug Discovery and Development from Target Selection to Lifecycle Management" *Drug Discovery Today* (In press).

18. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, H. Kobayashi. "Ectopic bone formation by controlled release of basic fibroblast growth factor from an injectable tissue engineered scaffold", *Journal of Biomedical Materials Research Part A* (In press).

19. S. Hong, D. Lee, H. Zhang, J. Q. Zhang, J. N. Resvick, **A. Khademhosseini**, M. R. King, R. Langer, J. M. Karp. "Covalent Immobilization of P-selectin Enhances Cell Rolling" *Langmuir* (In press).

20. D. Wright*, B. Rajalingam*, Y. Ling, J. Yeh, J. Karp, R. Langer, M. Dokmeci, **A. Khademhosseini**. "Reusable, reversibly sealable parylene membranes for cell and protein patterning". *Journal of Biomedical Materials Research: Part A,* Aug 29; [Epub ahead of print] (2007).

21. **A. Khademhosseini**, R. Langer. "Microengineered hydrogels for tissue engineering" *Biomaterials* Aug 16; [Epub ahead of print] (2007).

22. H. Hosseinkhani, M. Hosseinkhani, N.P. Gabrielsone, D.W. Pack, **A. Khademhosseini**, H. Kobayashi. "DNA nanoparticles encapsulated in 3D tissue-engineered scaffolds enhance osteogenic differentiation of mesenchymal stem cells" *Journal of Biomedical Materials Research: Part A*, Aug 9; [Epub ahead of print] (2007).

23. F. Tian, H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, G. Estrada, H. Kobayashi. "A quantitative analysis of cell adhesion on micro- and nano-aligned fabricated fibers" *Journal of Biomedical Materials Research: Part A* Jul 2; [Epub ahead of print] (2007).

24. D. Wright*, B. Rajalingam*, S. Selvarash, M. Dokmeci, **A. Khademhosseini**. "Generation of static and dynamic patterned co-cultures using microfabricated parylene-C stencils" *Lab on a chip* 7:1272-9 (2007).

25. C. Rivest, V. Yadav, D. Morrison, J. Rubin, B. Ni, A. Mahdavi, J.M. Karp, **A. Khademhosseini** "Microscale hydrogels: fabrication, applications and mechanical properties". *Journal of Mechanics of Materials and Structures* 2:1103-1119 (2007).

26. Y. Ling, J. Rubin, Y. Deng, C. Huang, U. Demirci, J.M. Karp, **A. Khademhosseini**. "A cell-laden microfluidic hydrogel". *Lab on a chip* 7: 756-62 (2007).

27. J.M. Karp*, J. Yeh*, G. Eng, J. Fukuda, J. Blumling III, K.Y. Suh, J. Cheng, J. Borenstein, R. Langer, **A. Khademhosseini**. "Controlling size, shape and homogeneity of embryoid bodies using poly(ethylene glycol) microwells" *Lab on a chip* 7: 786-94 (2007).

28. M. Hosseinkhani, H. Hosseinkhani, **A. Khademhosseini**, F. Bolland, H. Kobayashi, S. Prat. "Bone morphogenetic protein-4 enhances cardiomyocytes differentiation of cynomolgus monkey ES cells in Knockout Serum Replacement medium" *Stem Cells* 25: 571-580 (2007).

29. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, H. Kobayashi. "Bone regeneration through controlled release of bone morphogenetic protein-2 from 3-D tissue engineered nano-scaffold" *Journal of Controlled Release* 117: 380-386 (2007).

30. **A. Khademhosseini**, J. Yeh, G. Eng, S. Kucharczyk, R. Langer, G. Vunjak-Novakovic, M. Radisic "Microfluidic patterning for fabrication of contractile cardiac organoids" *Biomedical Microdevices* 9:149-57 (2007).

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31. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**. "Emerging applications of hydrogels and microscale technologies in drug discovery" *Drug Discovery* 1: 32-34 (2006).

32. G. T. Franzesi, B. Ni, Y. Ling, **A. Khademhosseini**. "A controlled-release strategy for the generation of crosslinked hydrogel microstructures" *Journal of American Chemical Society* 128:15064-65 (2006).

33. **A. Khademhosseini**, C. Bettinger, J. Karp, J. Yeh, Y. Ling, J. Borenstein, J. Fukuda, R. Langer. "Interplay of biomaterials and micro-scale technologies for advancing biomedical applications" *Journal of Biomaterials Science: Polymer Edition* 17: 1221-40 (2006).

34. **A. Khademhosseini**, G. Eng, J. Yeh, J. Fukuda, J. Blumling, R. Langer, J. Burdick. "Micromolding of photocrosslinkable hyaluronic acid for cell encapsulation and entrapment" *Journal of Biomedical Materials Research: Part A* 79:522-32 (2006).

35. P. Kim, H.E. Jeong, **A. Khademhosseini**, K.Y. Suh "Fabrication of non-biofouling polyethylene glycol (PEG) micro- to nanochannels by ultraviolet-assisted irreversible sealing" *Lab on a Chip* 6:1432-7 (2006).

36. O.C. Farokhzad, J.D. Dimitrakov, J.M. Karp, **A. Khademhosseini**, M.R. Freeman, R. Langer. "Drug delivery systems in urology - Getting 'smarter'" *Urology* 68:463-469 (2006).

37. **A. Khademhosseini***, L. Ferreira*, J. Yeh, J. Blumling, J. Fukuda, G. Eng, R. Langer. "Co-cultures of human embryonic stem cells and murine embryonic feeder cells on microwell patterned surfaces" *Biomaterials* 27:5968-77 (2006).

38. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, H. Kobayashi, Y. Tabata. "Enhanced angiogenesis through controlled release of basic fibroblast growth factor from peptide amphiphile for tissue regeneration." *Biomaterials* 27:5836-44 (2006).

39. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, "Tissue regeneration through self-assembled peptide amphiphile nanofibers", *Yakhte Medical Journal*, 8: 204-209 (2006).

40. J. Yeh*, Y. Ling*, J. M. Karp, J. Gantz, A. Chandawarkar, G. Eng, J. Blumling III, R. Langer, **A. Khademhosseini**. "Micromolding of photocrosslinkable hydrogels for cell encapsulation" *Biomaterials* 27:5391-8 (2006).

41. J. Fukuda, **A. Khademhosseini**, Y. Yeo, J. Yeh, X. Yang, G. Eng, J. Blumling III, C.F. Wang, D.S. Kohane, R. Langer. "Micromolding of photocrosslinkable chitosan hydrogel for spheroid microarray and co-cultures" *Biomaterials* 27:5259-67 (2006).

42. K. Y. Suh, **A. Khademhossein**i, S.Y. Jon, R. Langer. "Confinement of an individual M13 virus within a poly(ethylene glycol) nanowells" *Nano Letters* 6: 1196-1201 (2006).

43. N. Peppas, Z. Hilt, **A. Khademhosseini**, R. Langer. "Hydrogels in biomedical applications: From fundamentals to nanobiotechnology". *Advanced Materials* 18: 1345-1360 (2006).

44. **A. Khademhosseini**, R. Langer. "Nanobiotechnolgy for Tissue Engineering and Drug Delivery" *Chemical Engineering Progress* 102:38-42 (2006).

45. J. Cheng, B. Teply, C. Yim, S.Y. Jeong, I. Sherifi, S. Jon, **A. Khademhosseini,** O.C. Farokhzad, R. Langer. "Magnetite-PLGA-Insulin Microparticles: Novel Magnetically Responsive Vehicles for Oral Protein Delivery" *Pharmaceutical Research* 23:557-64 (2006).

46. **A. Khademhosseini**, R. Langer, J. Borenstein, J. Vacanti. "Microscale technologies for tissue engineering and biology" *Proceedings of National Academy of Sciences USA* 103:2480-2487 (2006).

47. J.M. Karp, L.S. Ferreira, **A. Khademhosseini**, A.H. Kwon, J. Yeh, R. Langer "Cultivation of human embryonic stem cells without the embryoid body step enhances osteogenesis in vitro" *Stem Cells* 24:835-43 (2006).

48. **A. Khademhosseini***, J. Fukuda*, J. Yeh, G. Eng, R. Langer. "Layer-by-layer deposition of HA and collagen for patterned cell co-cultures" *Biomaterials* 27:1479-1486 (2006).

2005

49. **A. Khademhosseini**, M.H. May, M.V. Sefton. "Conformal Coating of Mammalian Cells Immobilized onto Magnetically Driven Beads" *Tissue Engineering* 11:1797-1806 (2005).

50. **A. Khademhosseini**, J. Yeh, G. Eng, H. Kazi, J. Borenstein, J. Karp, O. Farokhzad, R. Langer. "Cell docking inside microwells within reversibly sealed microfluidic channels for multiphenotype cellular arrays" *Lab on a Chip* 5(12):1380-6 (2005). (Cover feature – also featured as a news article in *Analytical Chemistry* 78(3): 642 (2006)).

51. **A. Khademhosseini**. "Chips to Hits: microarrays and microfluidic technologies for high-throughput analysis and drug discovery" *Expert Reviews of Molecular Diagnostics* 5(6): 843-846 (2005).

52. P. Kim, D.–H. Kim, B. Kim, S. K. Choi, S. H. Lee, **A. Khademhosseini**, R. Langer, K. Y. Suh, "Fabrication of nanostructures of poly(ethylene glycol) for protein adsorption and cell adhesion" *Nanotechnology* 16: 2420-2426 (2005).

53. **A. Khademhosseini***, O.C. Farokhzad*, S.Y. Jon, A. Hermmann, J.J. Cheng, C. Chin, A. Kiselyuk, G. Eng, B. Teply, R. Langer,. "Microfluidic System for Studying the Interaction of Nanoparticles and Microparticles with Cells" *Analytical Chemistry* 77(17): 5453-5459 (2005).

54. K.Y. Suh, J.M. Yang, **A. Khademhosseini**, D. Berry, T.T. Tran, H. Park, and R. Langer "Characterization of Chemisorbed Hyaluronic Acid Directly Immobilized on Solid Substrates", *Journal of Biomedical Materials Research: Part B Applied Biomaterials* 72(B): 292-298 (2005).

2004

55. O.C. Farokhzad, S.Y. Jon, **A. Khademhosseini**, T.T. Tran, D. LaVan, R. Langer. "Nanoparticle-Aptamer Bioconjugates: A New Approach for Targeting Prostate Cancer Cells" *Cancer Research* 64(21):7668-7672 (2004).

56. K.Y. Suh, K. Yoon, H.H. Lee, **A. Khademhosseini**, R. Langer. "Solventless ordering of colloidal particles through the applicant of patterned elastomeric stamps under pressure", *Applied Physics Letters* 85 (13): 2643-2645 (2004).

57. K. Y. Suh, **A. Khademhosseini**, P.J. Yoo, R. Langer. "Patterning and separating infected bacteria using host-parasite and virus-antibody interactions" *Biomedical Microdevices* 6 (3):223-229 (2004).

58. S. Jaffar, K.T. Nam, **A. Khademhosseini**, J. Xing, R. Langer, A. Belcher. "Layer-by-layer surface modification and patterned electrostatic deposition of quantum dots" *Nano Letters* 4(8); 1421-1425 (2004).

59. **A. Khademhosseini**, J. Yeh, S.Y. Jon, G. Eng, K.Y. Suh, J. Burdick, R. Langer. "Molded poly(ethylene glycol) microstructures for docking and shear protecting cells within microfluidic channels" *Lab on a chip* 4; 425 - 430 (2004).

60. K.Y. Suh, **A. Khademohsseini**, G. Eng, R. Langer. "Single nanocrystal arrays on patterned poly(ethylene glycol) copolymer microstructures using selective wetting and drying" *Langmuir* 20 (15): 6080-6084 (2004).

61. **A. Khademhosseini**, K.Y. Suh, S.Y. Jon, G. Chen, G. Eng, J. Yeh, R. Langer. "A soft lithographic approach for fabricating patterned microfluidic channels" *Analytical Chemistry* 76 (13): 3675-3681 (2004).

62. **A. Khademhosseini***, J. Burdick*, R. Langer. "Fabrication of gradient hydrogels using a microfluidics/photopolymerization process". *Langmuir* 20 (13): 5153-5156 (2004).

63. K.Y. Suh, **A. Khademhosseini**, J.M. Yang, T.T. Tran, G. Eng, and R. Langer "Soft lithographic patterning of hyaluronic acid on solid substrates using molding and printing", *Advanced Materials* 16 (7): 584-588 (2004).

64. **A. Khademhosseini**, K.Y. Suh, J.M. Yang, G. Eng, J. Yeh, S. Levenberg, R. Langer. "Layer-by-layer deposition of hyaluronic acid and poly-L-lysine for patterned cell co-cultures", *Biomaterials*, 25: 3583-3592 (2004).

65. K.Y. Suh, J. Seong, **A. Khademhosseini**, P. E. Laibinis, R. Langer. "Patterned deposition of proteins and cells using a molding technique". *Biomaterials*, 25: 557-563 (2004).

2003

66. **A. Khademhosseini**, S. Jon, K.Y. Suh, G. Eng, J. Yeh, T.T. Tran, R. Langer. "Direct patterning of cell and protein resistant polymeric monolayer and microstructures". *Advanced Materials* 15 (23): 1995-2000 (2003).

67. S. Jon, J. Seong, **A. Khademhosseini**, T.T. Tran, P.E. Laibinis, R. Langer. "Construction of non-biofouling surfaces by polymeric self-assembled monolayers". *Langmuir*, 19 (15): 9989-9993 (2003).

*denotes equal contribution by authors.

Book Chapters:

68. S. Jinno, H.-C. Moller, M. Hosseinkhani **A. Khademhosseini**. "Strategies for enhanced biocompatibility and biodegradability of polymer-based nanostructures" in Nanoscience and Nanotechnology (In preparation).

69. **A. Khademhosseini***, Y. Du*, B. Rajalingam, J. Vacanti, R. Langer. "Microscale technologies for tissue engineering" in Advances in Tissue Engineering, Editor Julia Polak. Imperial College Press (2007) (In press).

70. G. Talei Franzesi, Y. Ling, U. Demirci, **A. Khademhosseini**. "Microscale tissue engineering" in Topics in Tissue Engineering vol 3, Editor Nureddin Ashammakhi. Open electronic access (2007) (In press).

71. P. Kim, D. Yanan, **A. Khademhosseini**, R. Langer, K.Y. Suh. "Applications of microfluidics to tissue engineering" in Micro/nanopatterning: concepts and applications, Editors Hong H. Lee and John Rogers, John Wiley & Sons (2007) (In press).

72. **A. Khademhosseini**, B. Rajalingam, S. Jinno, R. Langer. "Nanoengineered systems for tissue engineering and regeneration" in Nanomedicine. Editor Viola Vogel (2007) (In press).

73. S.M. Kim, J. Fukuda, **A. Khademhosseini**. "Patterned co-cultures for controlling the cellular microenvironment" in "Micro and Nanoengineering of the cellular microenvironment: Applications and Technologies", Editors A. Khademhosseini, J. Borenstein, S. Takayama, M. Toner. Artech House Publishing (2007).

74. J.M. Karp, A. Mahdavi, S. Hong, **A. Khademhosseini**, R. Langer. "Microscale approaches for bone tissue engineering" in "Micro and Nanoengineering of the cellular microenvironment: Applications and Technologies", Editors A. Khademhosseini, J. Borenstein, S. Takayama, M. Toner. Artech House Publishing (2007).

75. V.G. Yadav, M.D. Brigham, Y. Ling, C. Rivest, U. Demirci, **A. Khademhosseini**. "Micro and Nanoengineering for High-Throughput Biomedical Applications" in "Nanoscience and Its Applications in Biomedicine", Editor Donglu Shi, Springer-Verlag and Tsinghua University Press (2006).

76. K. Dang, U. Demirci, **A. Khademhosseini**. "Plasma in microchannels", in "Encyclopedia of Micro- and Nanofluidics" Editor Dongqing Li, Springer Publishing Co. (2006).

77. G. Durmus, R. Lin, **A. Khademhosseini**, U. Demirci. "Acoustic based biosensors", in "Encyclopedia of Micro- and Nanofluidics" Editor Dongqing Li, Springer Publishing Co. (2006).

78. D.W.G. Morrison, M. Dokmeci, U. Demirci, **A. Khademhosseini**. "Clinical applications of micro- and nanoscale biosensors", Editors Cato T. Laurencin, Kenneth E. Gonsalves, Craig Halberstadt, Lakshmi S. Nadir, John Wiley & Sons, Inc. (2006).

79. D.W.G. Morrison, K.Y. Suh, **A. Khademhosseini**. "Micro- and nanopatterning of bacteria and viruses for biosensing applications" Editors Mohammed Zourob, Turner (2006).

80. J. Karp, L. Ferreira, **A. Khademhosseini**, A. Mahdavi, R. Langer. "*In vitro* differentiation of Human ES cells down osteogenic pathways" in "Embryonic Stem Cells: a practical handbook", Editors, Stephen Sullivan, Kevin Eggan and Chad Cowan, John Wiley & Sons (2006).

81. **A. Khademhosseini*,** Y. Ling*, J. Karp, R. Langer. "Micro- and nanoscale control of cellular environment for tissue engineering". Nanobiotechnology: Concepts, Applications and Perspectives", Editors, Chad A. Mirkin and Christof M. Neimeyer, Ch. 18, p 349-366 Wiley-VCH (2006).

82. **A. Khademhosseini**, S. Gretchet-Nir, J. Karp, L. Ferreira, G. Vunjak-Novakovic, R. Langer. "Embryonic stem cells in tissue engineering". Principles of Tissue Engineering, 3rd Edition, Editor: Robert Lanza, Academic Press (2006).

83. S. Levenberg, **A. Khademhosseini**, R. Langer. "Embryonic stem cells and tissue engineering". In "Handbook of Stem Cells", Editors: Editors Doug Melton, James Thomson, John Gearhart, Brigid Hogan, Ron McKay, Roger Pedersen, Mike West and Robert Lanza, Academic Press (2004).

84. S. Levenberg, **A. Khademhosseini**, R. Langer. "Embryonic stem cells and tissue engineering". In "Essentials of Stem Cell Biology", Editors: Robert Lanza, John Gearhart, Brigid Hogan, Douglas Melton, Roger Pedersen, James Thomson, E. Donnall Thomas, Irving Weissman, Michael West, Academic Press (2004).

85. S. Levenberg, **A. Khademhosseini**, M. McDonald, J. Fuller, R. Langer. "Methods of (human) embryonic stem cell culture". Chapter 3 in "Culture of cells for tissue engineering", Editors I. Freshney and G. Vunjak-Novakovic, Humana Press (2004).

86. **A. Khademhosseini**, P.W. Zandstra. "Engineering the in vitro cellular microenvironment for the control and manipulation of adult stem cell responses". In "Adult stem cells", Editor K. Turksen, Ch. 15, p 289-314, Humana Press (2003).

Video Journals

87. B.G. Chung, A. Manbachi, **A. Khademhosseini**. "A microfluidic device with groove patterns for studying cellular behavior" *J. Visualized Exp*. 7 (http://www.jove.com/index/Details.stp?ID=270) (2007).

88. B.G. Chung, A. Manbachi, W. Saadi, F. Lin, N.L. Jeon, **A. Khademhosseini**. "A gradient generating microfluidic device for cell biology" *J. Visualized Exp.* 7 (http://www.jove.com/index/Details.stp?ID=271) (2007).

89. **A. Khademhosseini**. "Experimental approaches to tissue engineering" *J. Visualized Exp*. 7, (http://www.jove.com/index/Details.stp?ID=272) (2007).

Patents / Technology disclosures:

1. **A. Khademhosseini**, R. Abdi. "Targeted Immunosuppressive Drug Delivery to Prevent and Treat Autoimmune Disorders", Submitted to the BWH Technology Licensing Office (August 2007).

2. **A. Khademhosseini**, J.W. Hong, B.G. Chung. "High-throughput microfluidic systems", Submitted to the BWH Technology Licensing Office (May 2007).

3. **A. Khademhosseini**, J. Karp, D. Berry, F. Gu, R. Langer, "Nanomaterials for prevention and treatment of osteoporosis", Submitted to the MIT Technology Licensing Office (August 2006).

4. **A. Khademhosseini**, J. Karp, M. Moore, R. Langer, "Materials for influencing cell rolling", Submitted to the MIT Technology Licensing Office (May 2006).

5. **A. Khademhosseini**, J. Karp, L. Ferreira, Y. Yoon, R. Langer, "Highly efficient desiccants", Submitted to the MIT Technology Licensing Office (March 2006).

6. **A. Khademhosseini**, G. Talei Franzesi, B. Ni, Y. Ling. "A controlled release strategy for generation of crosslinked microstructures", filed to USA Patent Office (October 2006) - Patent pending.

7. **A. Khademhosseini**, B. Rajalingam. "Micropatterned reusable parylene membranes for controlling the cellular microenvironment", filed to USA Patent Office (October 2006) - Patent pending.

8. **A. Khademhosseini**, J. Karp, O. Farokhzad, R. Langer, "Microencapsulation of cells within shape-controlled biomaterials as building blocks for engineering tissues and organs.", filed to USA Patent Office (August 2006) – Patent pending.

9. **A. Khademhosseini**, J. Karp, D. Berry, R. Langer, "Tooth Whitening", filed to USA Patent Office (July 2006) - Patent pending.

10. **A. Khademhosseini**, J. Yeh, G. Eng, J. Borenstein, R. Langer. "Multi-phenotype cellular arrays within microfluidic channels", filed to USA Patent Office (May 2006) - Patent pending.

11. **A. Khademhosseini**, R. Karnik, F. Gu, P. Basto, C. Cannizzaro, O. Farokhzad, R. Langer, "High Throughput Synthesis of Functionalized Materials", filed to USA Patent Office (Dec. 2005) - Patent Pending.

12. **A. Khademhosseini**, J. Karp, L.S. Ferreira, R. Langer "Improved differentiation of human embryonic stem cells to osteogenic cells" filed to USA Patent Office (Sept. 2005) - Patent pending.

13. **A. Khademhosseini**, K.Y. Suh, S.Y. Jon, R. Langer. "Patterned surfaces and polymeric microstructures within robust microfluidic channels" filed to USA Patent Office (Feb. 2005) - Patent pending.

14. **A. Khademhosseini**, K.Y. Suh, D. Berry, R. Sasisekharan, R. Langer. "Deposition of glycosaminoglycans to form biologically active surfaces" filed to USA Patent Office (Sept. 2004) - Patent pending.

Conference Proceedings / Abstracts:

2008

1. **A. Khademhosseini**. "Three dimensional nanofabrication technologies for tissue engineering scaffolds". *8th World Biomaterials Congress.* Amsterdam, Netherlands (June, 2008) *(Keynote speaker)*.

2. M. Cioffi, M. Moretti, A. Manbachi, B.G. Chung, **A. Khademhosseini**, G. Dubini. "Shear stress and cell docking inside microfludic systems: A computational and experimental study". *16th European Congress of Biomechanics*. Luzern, Switzerland (July, 2008)

3. S. Hong, D. Lee, H. Zhang, J. Q. Zhang, J.N. Resvick, **A. Khademhosseini**, M.R. King, R. Langer, and J.M. Karp. "Covalent Immobilization of Selectins Enhances Cell Rolling". *8th World Biomaterials Congress.* Amsterdam, Netherlands (June, 2008).

4. C.-L. Chen, S. Jinho, H. Moller, B. Rajalingam, S.-H. Chao, S. Selvarasah, **A. Khademhosseini**, M. R. Dokmeci, "Multilayer Parylene-C Stencils for Dynamically Controlling Cell-Cell Interactions", *IEEE MEMS*, Tucson, AZ, USA, (January 13-17, 2008).

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5. B.G. Chung, S. Shrivastava, **A. Khademhosseini**. "Generation of microenvironments with controlled mechanical properties for analysis of mouse embryonic stem cell fate". *AIChE Annual meeting*, Salt Lake City, Utah (Nov. 4-9, 2007).

6. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**. "An injectable tissue engineered scaffold that induces angiogenesis through controlled release of basic fibroblast growth factor". *AIChE Annual meeting*, Salt Lake City, Utah (Nov. 4-9, 2007).

7. M. Hosseinkhani, H. Hosseinkhani, S. Jinno, **A. Khademhosseini**. "Post-translational modification of GATA-4 involved in the differentiation of monkey ES cell into cardiac myocytes". American Heart Association Annual Meeting, Orlando, FL (Nov. 5-9, 2007).

8. **A. Khademhosseini**. "Microengineering the cellular microenvironment for drug discovery and tissue engineering" 4th *European Symposium on Biopolymers*, Kusadasi, Turkey (Oct 5-6, 2007) (*Invited speaker*).

9. **A. Khademhosseini**. "A microfluidic device with groove patterns for studying cellular behavior". *Expertissues Meeting*, Kusadasi, Turkey (Oct 5-6, 2007) (*Invited speaker*).

10. B.G. Chung, H-C Möller, **A. Khademhosseini**. "Proliferation and differentiation of mouse embryonic stem cells in microwell arrays". *Biomedical Engineering Society (BMES)*, Los Angeles, CA (Sep 26-29, 2007).

11. M. Marzelli, G. Lee, G. Montesano, Ferenc A. Jolesz, **A. Khademhosseini**, U. Demirci, and S-S. Yoo. 'Positive-Contrast Cellular MRI using Transfection of Gd-Chelates", *Joint Molecular Imaging Conference*, Providence, Rhode Island, USA (September 2007).

12. **A. Khademhosseini**, L. Ferreira, J. Blumling III, J. Yeh, J. M. Karp, J. Fukuda, R. Langer, "Co-culture of human embryonic stem cells with murine embryonic fibroblasts on microwell patterned substrates", *American Chemical Society Annual Meeting*, Boston, MA (Aug. 2007).

13. **A. Khademhosseini**, "Protein and cell compatibility of parylene-C membranes" *2007 Materials Research Society Spring Meeting*, San Francisco, CA (April 2007).

14. B. Rajalingam, M.-W. Moon, A. Vaziri, **A. Khademhosseini**, "Cell behavior on hierarchical patterned surfaces" *2007 Materials Research Society Spring Meeting*, San Francisco, CA (April 2007).

15. J. Cohen, G. Lee, G. Percin, **A. Khademhosseini**, S-S. Yoo, and U. Demirci. "3D Vascularized Tissue Printing by Piezoelectric Droplet Generation", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

16. G. Montesano, G. Lee, G. Percin, S. Yoo, **A. Khademhosseini**, U. Demirci. "3D vascularized tissue printing by piezoelectric droplet generation", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

17. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, U. Demirci, H. Kobayashi, T. Azzam, A. Domb. "A Trail to Enhance Osteogenic Differentiation of Mesenchymal Stem Cells by Combinational Technology of Gene Therapy and Microfluidic System", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

18. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, U. Demirci, H. Kobayashi, T. Azzam, A. Domb. "Ectopic Bone Formation by Combinational Technology of Gene Therapy and Tissue Engineering", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

19. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, F. Tian, H. Kobayashi. "An investigation on surface topographies of materials on biological behaviors of cells", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

20. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, H. Kobayashi. "Rapid improvement in myocardial infarction tissue engineered nanoscaffold", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

21. Y. Ling, J. Rubin, **A. Khademhosseini**. "A Cell-Laden Microfluidic Hydrogel for Tissue Engineering and Diagnostics", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

22. H. Hosseinkhani, M. Hosseinkhani, **A. Khademhosseini**, H. Kobayashi. "A New Injectable Hydrogel Induces Angiogenesis through Controlled Release of Basic Fibroblast Growth Factor", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

23. G. Talei Franzesi, Y. Ling, B. Ni, **A. Khademhosseini**. 'Micromolding of fast-gelling hydrogels for 3D in vitro studies and bottom-up tissue engineering", *Society for Biomaterials Meeting*, Chicago, IL *(*April 2006).

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24. **A. Khademhosseini**. "Microscale technologies in tissue engineering", *GTCbio's 2nd Modern Drug Discovery & Development Summit (M3D)*, Philadelphia, PA (Dec. 2006).

25. Y. Ling, J. Rubin, J.M. Karp, **A. Khademhosseini**. "Agarose Microfluidics Devices for Diagnostics and Tissue Engineering", *2006 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2006).

26. D. Wright, B. Rajalingam, S. Selvarasah, Y. Ling, R. Langer, M.R. Dokmeci, **A. Khademhosseini**. "Micropatterned Parylene stencils for generation of dynamic and static patterned cellular co-cultures", *2006 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2006).

27. B. Rajalingam, D. Wright, J.M. Karp, S. Selvarasah, Y. Ling, J. Yeh, R. Langer, M.R. Dokmeci, **A. Khademhosseini**. "Reusable, reversibly sealable parylene-C membranes for cell and protein patterning", *2006 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2006).

28. D.W.G. Morrison, **A. Khademhosseini**. "Stem cell science in Iran" *Iran: Future Prospect, gathering of young Iranian scholars of North America*, Palo Alto, CA (Oct. 2006)

29. Y. Ling, J. Yeh, J. M. Karp, R. Langer, **A. Khademhosseini**. "Micromolding of shape controlled hydrogels for tissue engineering", 2006 *Biomedical Engineering Society Meeting*, Chicago, IL (Oct. 2006).

30. **A. Khademhosseini**, J. Fukuda, Y. Yeo, J. Yeh, X. Yang, G. Eng, J. Blumling, C.F. Wang, D.S. Kohane, R. Langer. "Micromolding of photocrosslinkable chitosan hydrogel for spheroid microarray and co-cultures", *2006 Biomedical Engineering Society Meeting*, Chicago, IL (Oct. 2006).

31. **A. Khademhosseini**. "Microscale technologies in tissue engineering", *Digital Fabrication Conference*, Denver, CO (Sept. 2006). *(Keynote speaker)*

32. K.Y. Suh, **A. Khademhosseini**, R. Langer. "Layer-by-layer deposition of polymers for controlling the cellular microenvironment", *9th Annual meeting of Japanese Tissue Engineering*, Kyoto, Japan (Sept. 2006)

33. **A. Khademhosseini**. "Micro- and nanoscale technologies for 3D tissue engineering", *CHI Tissue models for therapeutic development*, Boston, MA (Aug. 2006).

34. J. Fukuda, **A. Khademhosseini**, R. Langer. "Micropatterned cell co-cultures using layer-by-layer deposition of extracellular matrix components" Japanese Society for Tissue Engineering, Kyoto, Japan (Aug. 2006).

35. **A. Khademhosseini**, L.S. Ferreira, J.M. Karp, J. Blumling III, J. Yeh, J. Fukuda, G. Eng, J. Gantz, and R. Langer. "Micropatterned Co-cultures of Human Embryonic Stem Cells with Murine Embryonic Fibroblasts", *2006 International Society of Stem cell Research Meeting*, Toronto, ON (June 2006).

36. J. Yeh, J. M. Karp, G. Eng, J. Fukuda, J. Blumling, R. Langer, **A. Khademhosseini**. "Controlling size, shape, and homogeneity of embryonic stem cell aggregates and embryoid bodies within poly(ethylene glycol) microwells", *2006 International Society of Stem cell Research Meeting*, Toronto, ON (June 2006).

37. Y. Ling, J. Yeh, J. M. Karp, A. Chandawarkar, J. Gantz, R. Langer, **A. Khademhosseini**. "Shape and size-controlled photocrosslinkable microgels for encapsulation of embryonic stem cells", 2006 *International Society of Stem cell Research Meeting*, Toronto, ON (June 2006).

38. J.M. Karp, L.S. Ferreira; **A. Khademhosseini**, A. Kwan, J. Yeh, R. Langer. "Exclusion of the embryoid body step improves the differentiation efficiency of human embryonic stem cells into osteoblasts", *2006 International Society of Stem cell Research Meeting*, Toronto, ON (June 2006).

39. J.M. Karp, **A. Khademhosseini**, L.S. Ferreira, A. Kwan, J. Yeh, R. Langer. "Micropatterned Co-cultures of Human Embryonic Stem Cells with Murine Embryonic Fibroblasts", *Canadian Society for Biomaterials Annual Meeting*, Calgary, AL (May 2006)

40. J.M. Karp, L.S. Ferreira, **A. Khademhosseini**, A. Kwan, O. Farokhzad, J. Yeh, R. Langer. "Amplification of Osteogenic Cells from Human Embryonic Stem Cells", *Society for Biomaterials Meeting*, Pittsburgh, PA *(*March 2006).

41. J.M. Karp, L.S. Ferreira, **A. Khademhosseini**, R. Li, N. Choodnovskiy, K. Yan, R. Langer. "Cultivation of human embryonic stem cells without the embryoid body step enhances osteogenesis in vitro", 52nd Annual *Orthopedic Research Society*, Chicago, IL *(*March 2006).

42. **A. Khademhosseini**, G. Eng, J. Yeh, J. Fukuda, J. Blumling III, J.M. Karp, R. Langer, J.A. Burdick. "Micromolding of photocrosslinkable hyaluronic acid for cell encapsulation and entrapment", *Society for Biomaterials Meeting*, Pittsburgh, PA *(*March 2006).

43. **A. Khademhosseini**. "Academic job search: Perspectives from a recent faculty candidate", *Society for Biomaterials Meeting*, Pittsburgh, PA *(*March 2006).

44. **A. Khademhosseini**. "Applications of microscale technologies for Stem Cell Biology", Cambridge *Healthtech Institute's Commercial Implications of Stem Cell Research: Recognizing the Reality*, San Francisco, CA (Feb. 2006).

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45. G. Eng, **A. Khademhosseini**, J. Yeh, J. Fukuda, J. Blumling, J. Morin-Leisk, J. Gantz, R. Langer, J. Burdick. "Photocrosslinkable hyaluronic acid for surface micropatterning", *2005 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2005).

46. J. Yeh, **A. Khademhosseini**, , L. Ferreira, J. Karp, J. Fukuda, G. Eng, J. Blumling, J. Morin-Leisk, J. Gantz, R. Langer, Jason Burdick. "Microstructure mediated patterned co-cultures", *2005 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2005).

47. J. Fukuda, **A. Khademhosseini**, J. Yeh, G. Eng, J.J. Cheng, O. Farokhzad, R. Langer. "Micropatterned cell co-cultures using layer-by-layer deposition of extracellular matrix components", *2005 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2005).

48. **A. Khademhosseini**, J. Fukuda, G. Eng, J. Yeh, J. Gantz, J. Morin-Leisk, J. Blumling, R. Langer. "Patterned co-cultures of three-dimensional cell spheroids and support cells using microstructure patterned substrates", *2005 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2005).

49. O. C. Farokhzad, S. Jon, **A. Khademhosseini**, J.J. Cheng, B. Teply, E. Levy-Nissenbaum, R. Langer. "Cancer nanotechnology: drug encapsulated nanoparticle-aptamer bioconjugates for targeted delivery to prostate cancer cell". *Federation of European Cancer Societies*, Paris, France (Oct. 2005).

50. **A. Khademhosseini**, O. C. Farokhzad, S. Jon, J.J. Cheng, B. Teply, E. Levy-Nissenbaum, R. Langer. "Micro- and nanoscale technologies for cancer therapy". *2005 MIT Center for Cancer Research Retreat* , Water Valley, NH (Oct. 2005).

51. J. Cheng, B. Teply, I. Sherifi, E. Levy-Nissenbaum, **A. Khademhosseini**, R. Langer, O.C. Farokhzad; "Polymeric nanoparticle-aptamer bioconjugates as drug delivery vehicles for targeted prostate cancer therapy", 3rd International Nanomedicine and Drug Delivery Symposium, Baltimore, MD, (Sept. 26-27, 2005)

52. J. Fukuda, **A. Khademhosseini**, J. Yeh, G. Eng, R. Langer. "Layer-by-layer deposition of HA and collagen for patterned cell co-cultures" *CIMIT Symposium*, Boston, MA (Sept. 2005).

53. S. Yang, J. Fukuda, **A. Khademhosseini**, J. Burdick, R. Langer. "Fabrication of gradient hydrogels by a microfluidics/photopolymerization process". *CIMIT Symposium*, Boston, MA (Sept. 2005).

54. J.M. Karp, L.S. Ferreira, **A. Khademhosseini**, A.H. Kwon, J. Yeh, R. Langer. "Cultivation of human embryonic stem cells without the embryoid body step enhances osteogenesis in vitro." Current Progress in Tissue Engineering", Cambridge, MA (Sept. 2005).

55. **A. Khademhosseini**, G. Eng, J. Yeh, J. Karp, H. Kaji, J. Borenstein, O. Farokhzad, R. Langer. "Fabrication of Multiphenotye cell arrays within reversibly sealed microfluidic channels for high-throughput analysis", *MicroTAS Symp. Proc.* In press. Boston, MA (Oct. 2005).

56. P. Kim, D.–H. Kim, B. Kim, S. K. Choi, S. H. Lee, **A. Khademhosseini**, R. Langer, K. Y. Suh, "Fabrication of nanostructures of poly(ethylene glycol) and its application to protein and cell patterning" *MicroTAS Symp. Proc.* In press. Boston, MA (Oct. 2005).

57. **A. Khademhosseini***, J. Fukuda*, G. Eng, J. Yeh, O. Farokhzad, J.J. Cheng, R. Langer. "Layer-by-layer deposition of ionic biomolecules for patterned cellular co-cultures", *Biomedical Engineering Society Meeting*, Baltimore, MD *(*Sept. 2005).

58. J.M. Karp, L.S. Ferreira, **A. Khademhosseini**, A.H. Kwon, H. Seong, J. Yeh, R. Langer "Towards the differentiation of human embryonic stem cells for bone tissue engineering" *HealthTech's Institute Stem Cell Research Conference*, Cambridge, MA (Aug. 2005).

59. **A. Khademhosseini**, J. Yeh, G. Eng, R. Langer. "Controlled embryoid body arrays using micropatterned substrates or non-adhesive microwells", *2005 International Society of Stem cell Research Meeting*, San Francisco, CA (June 2005).

60. K.Y. Suh, **A. Khademhosseini**, S.Y. Jon, R. Langer. "Patterning inside microfluidic channels using a soft lithographic method." *The 6th KSME-JSME Thermal and Fluids Engineering Conference*, Jeju, KOREA (March 2005).

61. O. C. Farokhzad, **A. Khademhosseini**, S. Jon, A. Hermmann, C. Chin, R. Langer. "Development of a Microfluidic Channels for Evaluating Targeted Drug Delivery Vehicles in-vitro". *2005 International Anesthesia Research Society*, Cleveland, OH (2005).

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65. K.Y. Suh, **A. Khademhosseini**, J.M. Yang, G. Eng, D. Berry, T.T. Tran, R. Langer. "Direct Immobilization and Patterning of Hyaluronic Acid on Hydrophilic Substrates". *2004 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2004).

66. S. Jaffar, K.T. Nam, **A. Khademhosseini**, R. Langer, A. Belcher. "Layer-by-layer modification and patterned electrostatic deposition of quantum dots" *2004 Materials Research Society Fall Meeting*, Boston, MA (Nov. 2004).

67. **A. Khademhosseini**, A. Mostasheri. "An overview of socioeconomic characteristics of the Iranian-American community" *Iran: Future Prospect, gathering of young Iranian Scholars of North America*, Palo Alto, CA (Oct. 2004).

68. **A. Khademhosseini**, J. Yeh, G. Eng, K.Y. Suh, S.Y. Jon, R. Langer. "Embryonic stem cell self-renewal and differentiation on patterned substrates", *2004 International Society of Stem cell Research Meeting*, Boston, MA (June 2004).

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70. **A. Khademhosseini**, K.Y. Suh, G. Eng, J. Yeh, J.M. Yang, S. Levenberg, R. Langer. "Controlling stem cell microenvironments using surface patterning and patterned co-cultures", *Keystone symposia*, Keystone, CO (March 2004).

71. J. Yeh, G. Eng, **A. Khademhosseini**, R. Langer, "Fabrication of multi-phenotype cell arrays within reversibly sealed microfluidic channels for high-throughput analysis", *Harvard-MIT Division of Health Sciences and Technology (HST) Forum*, Boston, MA, 2004.

72. **A. Khademhosseini**, K.Y. Suh, S. J. Jon, G. Eng, J. Yeh, R. Langer, "Microscale approaches for controlling the cell microenvironment", *Proceedings for Canter for Cancer Research at MIT*, Waterville Valley, NH., 2004.

73. **A. Khademhosseini**, K.Y. Suh, S. J. Jon, G. Eng, J. Yeh, R. Langer, "Controlling embryoid body formation using micropatterned surfaces", *Proceedings for MIT's BPEC symposium*, 2004.

74. J. Yeh, G. Eng, **A. Khademhosseini**, R. Langer, "Controlling stem cell microenvironment using surface patterning and patterned co-cultures", *HST Forum*, Boston, MA, 2004.

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75. **A. Khademhosseini,** S. Jon, K.Y. Suh, G. Eng, J. Yeh, T.T. Tran, R. Langer. "Synthesis and application of a PEG-based copolymer for controlling surface topography and patterning proteins and cells", *NanoTech 2003 Conference, Switzerland.* (Nov. 2003).

76. O. Farokhzad, S. Jon, **A. Khademhosseini**, T.T. Tran, J. Toy, D. LaVan, R. Langer "Development of PEGylated PLA Nanoparticle-Aptamer Bioconjugates for Targeted Drug Delivery to Prostate Cancer Cells", *7th annual US-Japan Drug Delivery Conference*, Hawaii, USA. (Dec. 2003).

77. K.Y. Suh, **A. Khademhosseini,** S.Y. Jon, R. Langer. "Patterned PEG hydrogels for drug delivery", *7th annual US-Japan Drug Delivery Conference*, Hawaii, USA. (Dec. 2003).

78. K.Y. Suh, J. Seong, **A. Khademhosseini**, P.E. Laibinis, R. Langer. "Construction of non-biofouling surfaces by polymeric self-assembled monolayer". *2003 MRS Fall Meeting*, Boston, MA (Dec. 2003).

79. **A. Khademhosseini**, K.Y. Suh, S. J. Jon, R. Langer, "Controlled microenvironments based on microfluidics and microfabrication for controlling cell-microenvironment interactions", *Proceedings for MIT's BPEC symposium*, 2003.

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80. **A. Khademhosseini**, D. Lavan, S. Levenberg, J. Hsiao, A. Kiselyuk, R. Langer, "Generation of controlled microenvironments to study embryonic stem cell differentiation and self-renewal", *Proceedings for MIT's BPEC symposium*, (2002).

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81. S. Jon, J. Seong, **A. Khademhosseini**, T.T. Tran, P.E. Laibinis, R. Langer. "Construction of non-biofouling surfaces by polymeric self-assembled monolayer". *AIChE meeting*, San Francisco, CA *(*Nov. 2003).

82. **A. Khademhosseini**, C.Y. Ito, M.V. Sefton, W.L. Stanford, P.W. Zandstra. "*In vitro* differentiation of bone marrow derived Lin^- $CD45^+$ $sca\text{-}1^+$ $c\text{-}kit^+$ cells into hepatocyte-like cells", *Blood* **98** (11):548a (2001).

83. **A. Khademhosseini**, W.L. Stanford, M.V. Sefton, P.W. Zandstra. "*In vitro* differentiation of phenotypically defined bone marrow derived progenitors in liver-like microenvironments", *Annals of Biomedical Engineering.* **29** (S1): S-152 (2001).

84. **A. Khademhosseini**, W.L. Stanford, M.V. Sefton, P.W. Zandstra. "Endoderm differentiation of murine bone marrow derived cells *in vitro***",** *Proceedings of the 21st Annual Great Lakes Mammalian Development Meeting* (April 2001)**.**

85. J.M. Karp, **A. Khademhosseini**, *et al.* "Biomaterials Education from Students' Perspective", *Transactions of the 27th annual Meeting of the Society for Biomaterials* (April 2001).

86. **A. Khademhosseini**, W.L. Stanford, M.V. Sefton, P.W. Zandstra. "Endoderm differentiation of murine bone marrow derived cells in vitro", *Proceedings of the IBBME Scientific Day.* (2001).

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87. M.V. Sefton, **A. Khademhosseini**, "Engineering Biology: an elective course for first year engineering", *Proceedings of Whitaker Foundation Educational Summit* (Dec. 2000).

88. **A. Khademhosseini**, M. May, M.V. Sefton "Conformal Coating of Mammalian Cells Immobilized to Polystyrene Beads", *Proceedings for Canadian Society Chemical Engineers Conference* (Oct. 2000).

89. **A. Khademhosseini**, M. May, M.V. Sefton. "A Novel Geometric Configuration for Conformal Coating of Mammalian Cells", *Proceedings of the IBBME Scientific Day* (2000).

Invited Seminars at Universities and Companies:

1. University of Alabama, Birmingham, AL, January 2008.
2. Ohio State University, Columbus, OH, November 2007.
3. Northeastern University, Boston, MA, October 2007.
4. Middle East Technical University (METU), Ankara, Turkey, October 2007.
5. University of Texas- Austin, Department of Biomedical Engineering, Austin, TX, Sept. 2007.
6. BMW Group Research, Munich, Germany, Sept. 2007.
7. Korean Advanced Institute of Science and Technology (KAIST), Daejon, Republic of Korea, July 2007.
8. Gwangju Institute of Science & Technology (GIST), Gwangju, Republic of Korea, July 2007.
9. Palomar Technologies, Burlington, MA, July 2007.
10. Clemson University, Clemson, SC, July 2007.
11. Fudan University, Shanghai, China, June 2007.
12. Auburn University, Auburn, AL, May 2007.
13. CIMIT Forum, Boston, MA, April 2007.
14. University of Pisa, Pisa, Italy, March 2007.
15. Politecnico University, Milan, Italy, March 2007.
16. Engineering Science Division, University of Toronto, Toronto, ON, Canada, Feb. 2007.
17. NanoQuebec, Montreal, QC, Canada, Feb. 2007.
18. Hewlett-Packard Company, Corvallis, OR, December 2006.
19. University of Helsinki, Helsinki, Finland, November 2006.
20. Drexel University, Mechanical Engineering and Mechanics Department, Philadelphia, PA, Nov. 2006.

21. National Institute for Materials Science (NIMS), International Center for Young Scientists (ICYS), Tsukuba, Ibaraki, Japan, Nov. 2006.
22. Yonsei University. Department of Biotechnology, Seoul, Republic of Korea, Nov. 2006.
23. Brigham and Women's Hospital and Harvard Medical School, Division of Genetics, Boston, MA, Sept. 2006.
24. Korean Advanced Institute of Science and Technology, Daejon, Republic of Korea, July 2006.
25. Medical University of South Carolina, Charleston, SC, July 2006.
26. Becton Dickinson, Bedford, MA, June 2006.
27. Corning Inc., Corning, NY, April 2006.
28. University of Rochester, Rochester, NY, April 2006.
29. University of Helsinki, Helsinki, Finland, February 2006.
30. Brigham and Women's Hospital and Harvard Medical School, Division of Genetics, Boston, MA, November 2005.
31. Massachusetts General Hospital and Harvard Medical School, Center for Engineering in Medicine, Boston, MA, November 2005.
32. MIT, Program in Polymer Science and Technology, Cambridge, MA, Sept. 2005.
33. Boston Biomedical Research Institute, Watertown, MA, May 2005.
34. Duke University, Department of Biomedical Engineering, Durham, NC, April 2005.
35. University of Minnesota, Department of Biomedical Engineering, Minneapolis, MN, March 2005
36. University of Toronto, Department of Chemical Engineering and Applied Chemistry, Toronto, ON, March 2005.
37. University of California – Berkeley, Institute of Nanosciences and Nanoengineering, Berkeley, CA, March 2005.
38. University of Wisconsin, Department of Biomedical Engineering, Madison, WI, March 2005.
39. Stanford University, Materials Science and Engineering Department, Palo Alto, CA, March 2005.
40. Cornell University, Chemical and Biomolecular Engineering Department and Biomedical engineering Department, Ithaca, NY, Feb. 2005.
41. Tufts University, Biomedical Engineering Department, Somerville, MA, Feb. 2004.
42. University of Virginia, Department of Chemical Engineering, Charlottesville, VA, Feb. 2005.
43. Rice University, Bioengineering Department, Houston, TX, Feb. 2005.
44. University of Maryland, Bioengineering Department, College Park, MD, Feb. 2005.
45. University of California-Davis, Biomedical Engineering Department, Davis, CA, Feb. 2005.
46. University of Illinois, Department of Chemical Engineering, Urbana-Champaign, IL, Feb. 2005.
47. Georgia Institute of Technology, Chemical and Biomolecular Engineering Department, Atlanta, GA, Feb. 2005.
48. Northeastern University, Department of Chemical Engineering, Boston, MA, Jan. 2005.
49. MIT, Harvard-MIT Health Science and Technology Division, Cambridge, MA, Jan. 2005.
50. University of Washington, Bioengineering Department, Seattle, WA, Jan. 2005.
51. University of Pennsylvania, Bioengineering Department and Institute of Medicine Engineering, Philadelphia, MA, Jan. 2005.
52. John Hopkins University, Department of Biomedical Engineering, Baltimore, MA, Jan. 2005.
53. Cornell University, Biological Engineering Department, Ithaca, NY, Jan. 2005.
54. Spire Corp., Bedford, MA, Jan. 2005.
55. Harvard Medical School, Brigham and Women's hospital, Boston, MA, Dec. 2004.
56. Imperial College, Department of Materials Science and Engineering, London, England, Dec. 2004.
57. MIT, Biological Engineering Division, Cambridge, MA, Nov. 2004.
58. BASF Chemical Company, Ludwigshafen, Germany, Oct. 2004.
59. MIT, Biological Engineering Division, Cambridge, MA, March 2004.
60. University of Toronto, IBBME, Toronto, ON, Canada, March 2004.

STUDENTS MENTORED:

HST / MIT / BWH: Directing a laboratory of 15 graduate students and post doctoral researchers and 5 undergraduates

M. Hosseinkhani –post doc (Aug 2007-); S. Ali – post doc (July 2007-); S. Jinno – post doc (Jan. 2007-); B. Chung – post doc (Jan. 2007-); D. Yanan- post doc (Aug. 2007-); B. Rajalingam- post doc (June 2006-); L. Kang – post doc (March 2007-); M. Mian, MD Thesis (Jan. 2007-); Halil Tekin- PhD candidate (June 2007-); H. Möller- visiting student (Jan. 2007-); E. Mohammadi – visiting student (Sept. 2007-); E. Lo- visiting student (June 2007-); A. Navaldi (June 2007-); A. Bendali (June 2007-); A. Manbachi (June 2007); M. Brigham- MSc Thesis (Sept 2006 -); T. Chang (May 2006-); Y. Ling, MSc (Jan. 2006 –June 2007); G. Talei Francezi (June-Sept. 2006); J. Rubin (May 2006-Sept. 2006); B. Ni (May 2006-Sept. 2007); D. Wright (May 2006-Sept. 2006); D. Morrison (May 2006-Jan. 2007);.

MIT: Mentored 14 UROP, visiting and Masters Students

J. Yeh, UROP student and M. Sc. candidate (Jan. 2003 –); J. Sanghvi (Sept. 2005-); L. Hempel (Sept. 2005-May 2006); A. Chandawarkar (Sept. 2005-2006); S. Lee (Sept. 2005-2006); J. Gantz (June 2005-2006); J. Blumling (June 2005 –2006); G. Eng (Jan. 2003 –2006); J. Morin-Leisk (June 2005-Aug. 2005); L. Peng (Sept. 2004 – Dec. 2004); C. Chen, (Jan. 2004 – Dec. 2004); S. Joshi, (Jan. 2004 – June 2004), G. Chen, MIT, UROP student and M. Sc. candidate (Jan. 2003 – June 2004); A. Herrmann, visiting undergraduate student (Sept. 2003- Dec. 2003); A. Kiselyuk (Sept. 2002 - June 2004); J. Hsiao (Sept. 2002-June. 2003); K. Valentine (Sept 2002-Dec. 2002).

U of T: V. Wang, undergraduate (June 2000- Sept. 2000).

FUNDING:

Active:

2007-2012	National Institute of Health (NIDCR): R01 Microscale engineering the epithelial-mesenchymal interactions; Role: PI Total funding: $1,968,570
2007-2009	National Institute of Health (NIBIB): R21 Microengineering the murine embryonic stem cell environment; Role: PI Total funding: $481,250
2007-2009	National Institute of Health (NIBIB): R21 Microfluidic chip for cryopreservation of germ cells; Role: co-PI (PI: Demirci) Total funding: $481,250
2006-2008	Coulter Foundation Microscale bottom-up cardiac tissue engineering; Role: PI Total funding: $240,000
2006-2008	Harvard Stem Cell Institute Odontogenic fate of stem cells; Role: co-PI (PI: Maas) Total funding: $200,000
2007-2010	DOD: US Army Core of Engineers Cardiac based microfluidic biosensors; Role: PI Total funding: ~$300,000
2007-2008	Draper Laboratory Multi-responsive hydrogels for drug delivery; Role: co-PI (PI: Langer) Total funding: $100,000 (Subcontract to AK: $9,800)

2006-2007 CIMIT
Microencapsulation of cells within shape-controlled microgels as building blocks for tissue engineered organs; Role: PI
Total funding: $40,000

2007-2010 Institute for Soldier Nanotechnology, ISN
Switchable surfaces; Role: co-PI (PI: Langer)

Completed:

2006-2007 Draper Laboratory
Multi-phenotype cell arrays inside microfluidic channels; Role: co-PI (PI: Langer)
Total funding: $110,000 (Subcontract to AK: $5,500)

2006 National Institute of Health: P20
Systems approach to bioengineering of the tooth; Role: co-I
Total funding: $50,000

2006-2007 Draper Laboratory
Multi-phenotype cell arrays inside microfluidic channels; Role: co-I (PI: Langer)
Total funding: $100,000

2005-2006 Draper Laboratory
High-Throughput Multi-Phenotype Cellular Arrays on Surfaces or within Microchannels for Bioanalytical and Diagnostic Devices and Tissue Engineering; Role: co-I (PI: Langer)
Total funding: $90,000

SCIENTIFIC ORGANIZATIONS:

- American Association for the Advancement of Science, 2005-
- American Chemical Society, 2005-
- American Institute of Chemical Engineer, 1999-
- Biomedical Engineering Society, 2000-
- Canadian Society of Chemical Engineers, 1998-
- Chess Federation of Canada, 1996-
- International Society for Stem Cell Research, 2004-
- Materials Research Society, 2003-
- Mensa Society, 2000-
- Society for Biomaterials, 1999-
- Tissue Engineering and Regenerative Medicine Society (TERMIS), 2006-

PROFESSIONAL ROLES

Conference advisory board:

2007 TERMIS conference scientific advisory council, Tissue Engineering Regenerate conference, Toronto, ON, Canada.

Conference session chair:

2008 American Chemical Society conference session co-chair, “Controlling cell function through polymer design”, New Orleans, NO.
2008 World Biomaterials Congress, "Engineering Artificial Stem Cell Microenvironments", Amsterdam, Netherlands. (5/28/2008-6/1/2008)
2007 American Institute for Chemical Engineering (AIChE) conference session co-chair, “Functional Biomaterials”, Salt Lake City, Utah. (November 4 -9, 2007)
2007 BMES Annual meeting session chair “Stem cells in tissue engineering”, Los Angeles, CA. (September 26-29,2007)

2007 American Chemical Society conference session co-chair, "Engineering the adult and embryonic stem cell niche", Boston, MA.
2007 TERMIS conference Session co-chair, "Nanobiotechnology" Tissue Engineering Regenerate conference, Toronto, ON, Canada.
2007 Society for Biomaterials Session Chair "Micro and nanotechnologies and biomaterials", Chicago, IL.
2006 BMES 2006 Track Chain in the session "Stem cells in tissue engineering", Chicago, IL.
2006 IEEE/EMBS 2006 Track Chair in the session "Pharmaceuticals Studies, Drug Delivery and Gene Therapy", New York, NY.

Guest class lecturer:

2007	HST.500	Instructors: Sangeeta Bhatia and Mya Poe (1 session)
2007	HST S11	Instructor: Walter H. Abelmann (1 session)
2005	HST.521	Instructor: Fred Schoen (1 session)

Proposal reviewer for the following agencies:

- National Institute of Health, USA
- Agency for Science, Technology and Research's (A*STAR) Biomedical Research Council (BMRC) in Singapore

Editorial Board for Journals:

- Journal of Clinical Rehabilitative Tissue Engineering Research
- Open Tissue Engineering & Regenerative Medicine Journal
- Recent Patents in Biomedical Engineering

Reviewer for journals:

Annually review greater than 20 manuscripts from various fields in biology, engineering and medicine in the following journals:

- ACS Chemical Biology
- Acta Biomaterialia
- Advanced Materials
- Analytical Chemistry
- Angewandte Chemie
- Annals of Biomedical Engineering
- Applied Physics Letters
- ASM International Materials for Medical Devices Database
- Biomacromolecules
- Biomedical Microdevices
- Biotechnology and Bioengineering
- Biotechnology Progress
- Cell Biochemistry and Biophysics
- Chinese Journal of Clinical Rehabilitative Tissue Engineering Research
- Expert Opinion on Drug Discovery
- Experimental Mechanics
- International Journal of Engineering
- Journal of American Chemical Society
- Journal of Biomaterials Science: Polymer Edition
- Journal of Biomedical Materials Research: Part A
- Journal of Biomedicine and Biotechnology
- Journal of Colloid and Interface Science
- Journal of Micromechanics and Microengineering
- Journal of Tissue Engineering and Regenerative Medicine
- International Journal of Nanomedicine
- Kirk-Othmer Encyclopedia of Chemical Technology
- Langmuir

- Macromolecular Bioscience
- Molecular Pharmaceutics
- Nanomedicine: Nanotechnology, Biology, and Medicine
- Nanoscale Research Letters
- Nanotechnology
- Proceedings of the National Academy of Sciences of the United States (PNAS)
- Sensors
- Small
- Stem cells
- Tissue Engineering
- Thin solid films

OTHER LEADERSHIP POSITIONS:

- Harvard-MIT HST, Website organization committee, 2006-2007
- Harvard-MIT HST, Biomatrix, Faculty Advisor, 2006-2007
- Iranian Studies Group Executive Committee member, 2003-2005
- MIT Graduate Student Council (GSC)'s Academics, research and careers co-chair, 2004-2005
- Co-president of MIT Techlink, 2004-2005
- GSC Executive Committee member, 2004-2005
- Member of Bioprocess Engineering Center student leadership council, 2002-2004
- Biological Engineering Divisions student leadership board, 2002-2004
- Executive Financial Officer of MIT's TechLink, 2003-2004
- Biological Engineering Division's representative to MIT's GSC, 2002-2004
- President of U of T Biomedical Engineering Biomedical Association, 2000-2001
- Chair of U of T Chemical Engineering Graduate Association, 2000-2001
- Founder and Editor of Tissueeng.net (web-based tissue engineering organization), 2000-
- Member of U of T Chemical Engineering Department Chair Selection Advisory Committee, 2001
- Member of U of T Faculty of Applied Sciences and Engineering Curriculum Committee, 2001
- U of T Chemical Engineering Graduate Association representative to C.S.Ch.E., 1999-2001
- Executive member of U of T Biomedical Engineering Student Association., 1999-2000
- Executive member of U of T Chemical Engineering Graduate Student Association, 1999-2000
- Captain of co-ed softball team for intramural chemical engineering team, 1999-2000
- Coach of Jarvis Collegiate Institute Men's Varsity Baseball Team, 1996-1997

SKILLS AND ABILITIES:

- Skilled in cell and tissue culture methods, flow cytometric analysis, immunostaining and various other cell and molecular biology techniques
- Skilled in materials science and surface analysis such as SEM, AFM, XPS
- Experienced in various engineering applications such as AutoCAD, MATLAB, Mathematica, Maple
- Excellent Oral and written communication skills in English and Farsi

HOBBIES AND INTERESTS:

Weight training, fitness, baseball, traveling, chess (Expert Level), computer and internet related technologies and reading fiction and non-fiction.

REFERENCES:

Prof. R. Langer, Sc.D.
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Harvard-MIT Division of Heath Sciences and Technology
Division of Biological Engineering
Massachusetts Institute of Technology,
77 Massachusetts Avenue, Cambridge, MA, 02139, USA
Email: rlanger@mit.edu phone: (617) 253-3107

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