

## **RICHARD A. GEMEINHART, PH.D.**

The University of Illinois  
833 South Wood Street (MC 865)  
357 College of Pharmacy Building  
Chicago, IL 60612-7231

(312) 996-2253 *voice*  
(312) 996-0098 *fax*  
rag@uic.edu *e-mail*  
<http://www.bpsl.uic.edu> *url*

### **ACADEMIC APPOINTMENTS**

The University of Illinois, College of Pharmacy, Department of Biopharmaceutical Sciences, Chicago, IL  
Assistant Department Head for Graduate Programs, 2007-2011  
Associate Professor, 2007-present  
Assistant Professor, 2001-2007  
Member, University of Illinois, Graduate College, 2001-present  
Member, University of Illinois Cancer Center, 2001-present  
Member, Center for Wound Healing and Tissue Regeneration, 2008-present  
Member, Honor's College, 2008-present  
Director of Graduate Studies for Biopharmaceutical Sciences, 2005-2011  
Director of Graduate Education for College of Pharmacy, 2012-2014  
University of Illinois at Chicago Research Integrity Officer, 2014-present  
The University of Illinois, College of Medicine, Department of Ophthalmology and Visual Science, Chicago, IL  
Associate Professor (by courtesy), 2008-present  
The University of Illinois, College of Engineering, Department of Bioengineering, Chicago, IL  
Associate Professor (by courtesy), 2007-present  
Assistant Professor (by courtesy), 2001-2007  
Cornell University, School of Chemical Engineering, Ithaca, NY  
Postdoctoral Associate, 1999-2001  
Purdue University, Department of Industrial and Physical Pharmacy, West Lafayette, IN  
Graduate Research Assistant, 1995-1999  
Purdue University, Department of Industrial and Physical Pharmacy, West Lafayette, IN  
Graduate Teaching Assistant, 1994-1995  
Purdue University, Laboratory of Renewable Resources, West Lafayette, IN  
Undergraduate Reaching Assistant, 1993-1994  
Purdue University, Department of Civil Engineering, West Lafayette, IN  
Undergraduate Laboratory Assistant, 1992-1993

### **OTHER EXPERIENCE**

Cynergy Therapeutics, LLC  
Founder and Manager, 2005  
Nitto Denko Technical Corporation  
Consultant, 2009

### **EDUCATION**

Postdoctoral, Cornell University, School of Chemical Engineering, 1999-2001  
Advisor: W. Mark Saltzman, Ph.D., Goizueta Foundation Professor of Chemical and Biomedical Engineering and Head of Biomedical Engineering at Yale University  
Ph.D., Purdue University, Department of Industrial and Physical Pharmacy, 1999  
Advisor: Kinam Park, Ph.D., Showalter Distinguished Professor of Biomedical Engineering and Pharmaceutics  
Thesis: Properties of Superporous Hydrogels for Drug Delivery  
B.S.E., Purdue University, School of Interdisciplinary Engineering, 1994  
Advisor: Nancy W. Y. Ho, Group Leader for Molecular Biology, LORRE

### **AWARDS AND HONORS**

Rho Chi Pharmacy Honor Society, inducted 1995  
NIH Chemical Pharmacology Trainee, Purdue University, 1996-1999  
Controlled Release Society Student Chapter President, Purdue University, 1997-1999  
American Association of Colleges of Pharmacy, New Investigator Award, 2002-2003  
Society For Biomaterials Young Investigator Award, 2006  
Hans W. Vahlteich Scholar, 2006-2007, 2014-2015

**PROFESSIONAL MEMBERSHIPS**

American Association for the Advancement of Science, 1999-current  
 American Association of Colleges of Pharmacy, 1999-current  
 American Association of Pharmaceutical Scientists, 1996-current  
     UIC Student Chapter Advisor, 2002-2010  
 American Chemical Society, 1996-current  
 Biomedical Engineering Society, 2008-current  
 Controlled Release Society, 1997-current  
     Chicago Student Chapter Advisor, 2007-current  
 Society For Biomaterials, 1997-current  
 Sigma Xi, The Scientific Research Society 2004-current  
 Tissue Engineering and Regenerative Medicine International Society, 1999-current

**PEER-REVIEWED PUBLICATIONS**

1. Park K, **Gemeinhart RA**, Park H. Movement of fibrinogen receptors on the ventral membranes of spreading platelets, *Biomaterials* 19(4-5): 387-395, 1998.  
[http://dx.doi.org/10.1016/S0142-9612\(97\)00111-7](http://dx.doi.org/10.1016/S0142-9612(97)00111-7)
2. **Gemeinhart RA**, Park H, Park K. Pore structure of superporous hydrogels, *Polymers for Advanced Technologies* 11(8-12): 617-625, 2000.  
[http://dx.doi.org/10.1002/1099-1581\(200008/12\)11:8/12<617::AID-PAT12>3.0.CO;2-L](http://dx.doi.org/10.1002/1099-1581(200008/12)11:8/12<617::AID-PAT12>3.0.CO;2-L)
3. **Gemeinhart RA**, Chen J, Park H, Park K. pH-Sensitivity of fast responsive superporous hydrogels, *Journal of Biomaterials Science, Polymer Edition* 11(12): 1371-1380, 2000.  
<http://dx.doi.org/10.1163/156856200744390>
4. **Gemeinhart RA**, Park H, Park K. Effect of compression on fast swelling of poly(acrylamide-co-acrylic acid) superporous Hydrogels, *Journal of Biomedical Materials Research* 55(1): 54-62, 2001.  
[http://dx.doi.org/10.1002/1097-4636\(200104\)55:1<54::AID-JBM80>3.0.CO;2-Y](http://dx.doi.org/10.1002/1097-4636(200104)55:1<54::AID-JBM80>3.0.CO;2-Y)
5. Guo C, **Gemeinhart RA**. Assessment of a modular transfection system based upon cellular localization of DNA, *Molecular Pharmaceutics* 1(4): 309-316, 2004.  
<http://dx.doi.org/10.1021/mp049969a>
6. Kang CE, Gemeinhart EJ, **Gemeinhart RA**. Cellular alignment by grafted adhesion peptide surface density gradients, *Journal of Biomedical Materials Research* 71A(3): 403-411, 2004.  
<http://dx.doi.org/10.1002/jbm.a.30137>
7. Tan J, **Gemeinhart RA**, Ma M, Saltzman WM. Improved cell adhesion and proliferation on synthetic phosphonic acid-containing hydrogels, *Biomaterials* 26(17): 3663-3671, 2005.  
<http://dx.doi.org/10.1016/j.biomaterials.2004.09.053>
8. **Gemeinhart RA**, Luo D, Saltzman WM. Cellular Fate of a modular DNA delivery system mediated by silica nanoparticles, *Biotechnology Progress* 21(2): 532-537, 2005.  
<http://dx.doi.org/10.1021/bp049648w>
9. Yan X, **Gemeinhart RA**. Cisplatin delivery from poly(acrylic acid-co-methyl methacrylate) microparticles, *Journal of Controlled Release* 106(1-2): 198-208, 2005.  
<http://dx.doi.org/10.1016/j.jconrel.2005.05.005>
10. Tauro JR, **Gemeinhart RA**. Development of amine-containing polymeric particles, *Journal of Biomaterials Science, Polymer Edition* 16(10): 1233-1244, 2005.  
<http://dx.doi.org/10.1163/156856205774269539>
11. Tauro JR, **Gemeinhart RA**. Extracellular protease activation of chemotherapeutics from hydrogel matrices: A new paradigm for local chemotherapy, *Molecular Pharmaceutics* 2(5): 435-438, 2005.  
<http://dx.doi.org/10.1021/mp050028n>
12. Tauro JR, **Gemeinhart RA**. Matrix metalloprotease triggered local delivery of cancer chemotherapeutics from hydrogel matrixes, *Bioconjugate Chemistry* 16(5): 1133-1139, 2005.  
<http://dx.doi.org/10.1021/bc0501303>
13. Muni NJ, Qian H, Qtaishat NM, **Gemeinhart RA**, Pepperberg DR. Activation of membrane receptors by neurotransmitter released from temperature-sensitive hydrogels, *Journal of Neuroscience Methods* 151(2) 97-105, 2006. <http://dx.doi.org/10.1016/j.jneumeth.2005.06.029>
14. **Gemeinhart RA**, Bare CM, Haasch RT, Gemeinhart EJ. Osteoblast-like cell attachment to and calcification of novel phosphonate-containing polymeric substrates, *Journal of Biomedical Materials Research* 78A(3): 433-440, 2006. <http://dx.doi.org/10.1002/jbm.a.30788>

15. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Cervical cancer treatment with a locally insertable controlled release system, *Journal of Controlled Release* 115(3): 280-288, 2006. <http://dx.doi.org/10.1016/j.jconrel.2006.08.014>
16. Vartak DG, **Gemeinhart RA**. Matrix metalloproteases: Underutilized Targets for Drug Delivery (Invited Review), *Journal of Drug Targeting* 15(1): 1-20, 2007. <http://dx.doi.org/10.1080/10611860600968967>
17. Chaterji S, **Gemeinhart RA**. Enhanced Osteoblast-Like Cell Adhesion and Proliferation Using Sulfated Polymeric Scaffold, *Journal of Biomedical Materials Research, Part A* 83A(4): 990-998, 2007. <http://dx.doi.org/10.1002/jbm.a.31283>
18. Guo C, **Gemeinhart RA**. Understanding the adsorption mechanism of chitosan onto poly(lactide-co-glycolide) particles, *European Journal of Pharmaceutics and Biopharmaceutics* 70(2): 597-604, 2008. <http://dx.doi.org/10.1016/j.ejpb.2008.06.008>
19. Tauro JR, Lee B-S, Lateef SS, **Gemeinhart RA**. Matrix Metalloprotease Selective Peptide Substrates Cleavage within Hydrogel Matrices for Cancer Chemotherapy Activation, *Peptides* 29(11):1965-1973, 2008. <http://dx.doi.org/10.1016/j.peptides.2008.06.021>
20. **Gemeinhart RA**. Digestive Enzyme Targeted Polymer Therapeutic: MIT WO 2007/103364 A2, *Expert Opinion on Therapeutic Patents*. 18(9): 1085-1090, 2008. <http://dx.doi.org/10.1517/13543776.18.9.1085>
21. Keskar V, Marion NW, Mao JJ, **Gemeinhart RA**. In Vitro Evaluation of Macroporous Hydrogels to Facilitate Stem Cell Infiltration, Growth and Mineralization, *Tissue Engineering* 15(7): 1695-1707, 2009. <http://dx.doi.org/10.1089/ten.tea.2008.0238>
22. Gandhi M, Srikar R, Yarin AL, Megaridis CM, **Gemeinhart RA**. Mechanistic Examination of Protein Release from Polymer Nanofibers, *Molecular Pharmaceutics* 6(2): 641-647, 2009. <http://dx.doi.org/10.1021/mp800160p>
23. Keskar V, Gandhi M, Gemeinhart EJ, **Gemeinhart RA**. Initial Evaluation of Vascular Ingrowth into Superporous Hydrogels, *Journal of Tissue Engineering and Regenerative Medicine* 3(6): 486-490, 2009. <http://dx.doi.org/10.1002/term.183>
24. Vartak DG, Lee B-S, **Gemeinhart RA**. In vitro evaluation of functional interaction of integrin  $\alpha\beta 3$  and matrix metalloprotease-2, *Molecular Pharmaceutics* 6(6): 1856-1867, 2009. <http://dx.doi.org/10.1021/mp00152t>
25. Kadakia A, Keskar V, Titushkin I, Djalilian A, **Gemeinhart RA**, Cho MR. Hybrid Superporous Scaffolds: An Application for Cornea Tissue Engineering, *Critical Reviews in Biomedical Engineering* 36(5-6): 441-471, 2008. <http://dx.doi.org/10.1615/CritRevBiomedEng.v36.i5-6.50>
26. Bae M, Divan R, Suthar KJ, Mancini DC, **Gemeinhart RA**. Fabrication of PEG Hydrogel Particles for Pharmaceutics using Electron beam and Optical Lithography, *Journal of Vacuum Science and Technology-B* 28(6): C6P24-C6P26, 2010. <http://dx.doi.org/10.1116/1.3517716>
27. Zhao RS, Hollis CP, Zhang H, Sun L, **Gemeinhart RA**, Li T. Hybrid Nanocrystals: Achieving Concurrent Therapeutic and Bioimaging Functionalities Toward Solid Tumors, *Molecular Pharmaceutics* 8(5): 1985-1991, 2011. <http://dx.doi.org/10.1021/mp200154k>
28. Shafiq MA, **Gemeinhart RA**, Yue BYJT, Djalilian AR. Decellularized Human Cornea for Reconstructing the Corneal Epithelium and Anterior Stroma, *Tissue Engineering* 18(5): 340-348, 2012. <http://dx.doi.org/10.1089/ten.TEC.2011.0072>
29. Desai ES, Tang MY, Ross, A, **Gemeinhart RA**. Critical Factors Affecting Cell Encapsulation in Superporous Hydrogels, *Biomedical Materials*. 7(2): 024108, 2012 <http://dx.doi.org/10.1088/1748-6041/7/2/024108>
30. Rayahin JE, Buhman JS, **Gemeinhart RA**. Hybrid Nanocrystals: University of Kentucky US 2006/0280680A1, *Expert Opinion on Therapeutic Patents* 22(3): 341-348, 2012. <http://dx.doi.org/10.1517/13543776.2012.665877>
31. Köllmer M, Keskar V, Hauk T, Collins JM, Russell B, **Gemeinhart RA**. Stem Cell-Derived Extracellular Matrix Enables Survival and Multilineage Differentiation within Superporous Hydrogels, *Biomacromolecules* 13(4): 963-973, 2012. <http://dx.doi.org/10.1021/bm300332w>
32. Zhang Y, **Gemeinhart RA**. Improving Matrix Metalloproteinase-2 Specific Response of a Hydrogel System using Electrophoresis, *International Journal of Pharmaceutics* 429(1-2): 31-37, 2012. <http://dx.doi.org/10.1016/j.ijpharm.2012.03.012>

33. Ross AE, Tang MY, **Gemeinhart RA**. Effects of Molecular Weight and Loading on Matrix Metalloproteinase-2 Mediated Release from Poly(Ethylene Glycol) Diacrylate Hydrogels, *The AAPS Journal* 14(3): 482-490, 2012. <http://dx.doi.org/10.1208/s12248-012-9356-3>
34. Buhrman JS, Rayahin JE, Köllmer M, **Gemeinhart RA**. In-house preparation of hydrogels for batch affinity purification of glutathione S-transferase tagged recombinant proteins, *BMC Biotechnology* 12: 63, 2012. <http://dx.doi.org/10.1186/1472-6750-12-63>
35. Zellander A, Gemeinhart RA, Djailian AR, Makhsous M, Sun S, Cho MR. Designing a Gas Foamed Scaffold for Keratoprosthesis. *Material Science and Engineering C-Materials for Biological Applications* 33(6): 3396-3403, 2013. <http://dx.doi.org/10.1016/j.msec.2013.04.025>
36. Köllmer M, Buhrman JS, Zhang Y, **Gemeinhart RA**. Markers Are Shared Between Adipogenic and Osteogenic Differentiated Mesenchymal Stem Cells. *Journal of Developmental Biology and Tissue Engineering* 5(2): 18-25. <http://dx.doi.org/10.5897/JDBTE2013.0065>
37. Buhrman JS, Cook LC, Rayahin JE, Federle MJ, **Gemeinhart RA**. Proteolytically activated anti-bacterial hydrogel microspheres. *Journal of Controlled Release* 171(3): 288-295, 2013. <http://dx.doi.org/10.1016/j.jconrel.2013.06.023>
38. Hollis CP, Weiss HL, Leggas M, Evers BM, **Gemeinhart RA**, Li T. Biodistribution and Bioimaging Studies of Hybrid Paclitaxel Nanocrystals: Lessons Learned from the EPR Effect and Image-Guided Drug Delivery. *Journal of Controlled Release* 172(1): 12-21, 2013. <http://dx.doi.org/10.1016/j.jconrel.2013.06.039>
39. Köllmer M, Popescu C, Manda P, Zhou L, **Gemeinhart RA**. Stability of Benzocaine Formulated in Commercial Oral Disintegrating Tablet Platforms. *AAPS PharmSciTech* 14(4): 1333-1340, 2013. <http://dx.doi.org/10.1208/s12249-013-0015-5>
40. Buhrman JS, Cook LC, Rayahin, JE, Federle MJ, **Gemeinhart RA**. Soluble recombinant melittin purified by extracting insoluble lysate of *Escherichia coli* without denaturation is as functional as chemically synthesized melittin. *Biotechnology Progress* 29(5): 1150-1157, 2013. <http://dx.doi.org/10.1002/btpr.1784>
41. Zhang Y, Wang ZJ, **Gemeinhart RA**. Progress in MicroRNA Delivery, *Journal of Controlled Release* 172(3): 962-974, 2013. <http://dx.doi.org/10.1016/j.jconrel.2013.09.015>
42. Zhang H, Wang X, Dai W, **Gemeinhart RA**, Zhang Q, Li T. Pharmacokinetics and Treatment Efficacy of Camptothecin Nanocrystals on Lung Metastasis. *Molecular Pharmaceutics* 11(1): 226-233, 2014. <http://dx.doi.org/10.1021/mp4004018>
43. Hollis CP, Weiss HL, Evers BM, **Gemeinhart RA**, Li T. *In Vivo* Investigation of Hybrid Paclitaxel Nanocrystals with Dual Fluorescent Probes for Cancer Theranostics, *Pharmaceutical Research* 31(6): 1450-1459, 2014. <http://dx.doi.org/10.1007/s11095-013-1048-x>
44. Sharma V, Köllmer M, Szymusiak M, Nitsche LC, **Gemeinhart RA**, Liu Y. Toroidal-spiral particles for co-delivery of anti-VEGFR-2 antibody and irinotecan – a potential implant to hinder recurrence of glioblastoma multiforme, *Biomacromolecules* 15(3): 756-762, 2014. <http://dx.doi.org/10.1021/bm401550r>
45. Zellander A, Zhao H, Kotecha M, Low, K-B, **Gemeinhart RA**, Wardlow M, Abiade J, Cho M. Characterization of Pore Structure in Biologically Functional Poly(2-Hydroxyethyl Methacrylate) - Poly(Ethylene Glycol) Diacrylate (PHEMA-PEGDA), *PLOS One* 9(5): e96709, 2014. <http://dx.doi.org/10.1371/journal.pone.0096709>
46. Zhang Y, Köllmer M, Buhrman JS, Tang MY, **Gemeinhart RA**. Arginine-rich, Cell Penetrating Peptide-microRNA Inhibitor Complexes Decrease Glioblastoma Migration Potential, *Peptide*, 58(1): 83-90, 2014. <http://dx.doi.org/10.1016/j.peptides.2014.06.008>
47. Rayahin, JE, Buhrman JS, **Gemeinhart RA**. Melittin-glutathione S-transferase fusion protein exhibits anti-inflammatory properties and minimal toxicity, *European Journal of Pharmaceutical Sciences*, 65(1): 112-121, 2014. <http://dx.doi.org/10.1016/j.ejps.2014.09.012>
48. Zhang Y, Liu Y, Sen S, Král P, **Gemeinhart RA**. Charged Group Surface Accessibility Determines Micelleplexes Formation and Cellular Interaction, *Nanoscale*, 7(17): 7559-7564, 2015. <http://dx.doi.org/10.1039/C5NR00095E>
49. Lu Y, Chen Y, **Gemeinhart RA**, Wu W, Li T. Hybrid nanocrystals: applications in tumor therapy and imaging, *Nanomedicine*, *Accepted for Publication*.
50. Rayahin, JE, Buhrman JS, Zhang Y, Koh TJ, **Gemeinhart RA**. High and low molecular weight hyaluronic acid differentially influence macrophage activation, *ACS Biomaterials Science and Engineering*. 1(7): 481-493, 2015. <http://dx.doi.org/10.1021/acsbiomaterials.5b00181>

51. Tang MY, Rayahin JE, **Gemeinhart RA**. Drug-loaded micelles exhibit stable encapsulation and release from hydrogels, *In preparation*.
52. Pearson RM, Hsu H-J, Rayahin JE, Bugno J, **Gemeinhart RA**, Hong S. Polymer architecture and PEG chain length on nanocarrier influence cell targeting and macrophage response, *In preparation*.

#### **PATENTS AND DISCLOSURES**

1. **Gemeinhart RA**. Alignment of Cells for Connective Tissue Repair. Disclosed (CX033) on 11/05/2003.
2. **Gemeinhart RA**. Approach for Localized Chemotherapy Delivery with Local and Systemic Effects. Disclosed (CY039) on 01/05/2005.
3. **Gemeinhart RA**, Tauro JR. Composition and Method for Providing Localized Delivery of a Therapeutic Agent. **US 7,943,569** (May 17, 2011; CY053).
4. **Gemeinhart RA**, Yan X. Method for complexing chemotherapeutics to locally deliver. Disclosed (CZ012) on 08/15/2005.
5. **Gemeinhart RA**. Method and composition for delivering DNA and drug molecules. Disclosed (DB060) on 12/17/2007.
6. **Gemeinhart RA**. Superporous Hydrogel with Cells Encapsulated Therein and Method for Producing the Same. **US 8,414,879B2** (April 9, 2013; DB074).
7. Cho MR, Kadakia A, Djalilian A, **Gemeinhart RA**. Hybrid Superporous Hydrogel Scaffold for Cornea Regeneration. Disclosed (DB103; approximately 07/01/2008), provisional patent application submitted (07/31/2008; 61/85,064), and full application submitted (07/29/2009; US10/80,840) and published online (04/01/2010).
8. **Gemeinhart RA**, Mancini D, Bae M. Hydrogel Microstructures for Polynucleic acid Delivery. Disclosed (DD144) and provisional patent application submitted (April 2010).
9. **Gemeinhart RA**, Rayahin JE, Buhrman JS. Modular and Stoichiometric Loaded Protease-Sensitive Recombinant Protein Hydrogels. Disclosed (DF120; 02/20/2012), provisional patent application submitted (06/06/2012), and full application submitted (06/06/2013; US14/405,701).
10. **Gemeinhart RA**, Tang MY, Buhrman JS. Recombinant MMP-sensitive Polymers for Therapeutic Delivery. Disclosed (DF121; 2/20/2012).
11. **Gemeinhart RA**, Zhang Y. Method of Electrophoretic Removal of Unreacted Groups from Materials. Disclosed (DF134; 3/13/2012) and provisional patent application submitted (03/08/2012).
12. **Gemeinhart RA**, Buhrman JS. Supramolecular Recombinant Polymers. Disclosed (DF136; 3/13/2012).

#### **BOOK CHAPTERS**

1. **Gemeinhart RA**, Guo C. *Fast Swelling Hydrogels* in *Reflexive polymers and hydrogels: Understanding and designing fast-responsive polymeric systems*, edited by Yui N, Mrsny R, Park K. Boca Raton, FL: CRC Press; 2004. pp. 245-257.
2. Zamiri C, **Gemeinhart RA**. *Drug Delivery Systems for Pulmonary Delivery of Therapeutic Biomacromolecules* in *Pharmaceutical Biotechnology*, Second Edition, Ed. Groves MJ. Boca Raton, FL: CRC Press; 2005, 255-277.
3. **Gemeinhart RA**. Polymeric Systems for Oral Protein and Peptide Delivery in *Pharmaceutical Biotechnology*, Second Edition, Ed. Groves MJ. Boca Raton, FL: CRC Press; 2005, 279-302.

#### **ABSTRACTS AND PROCEEDINGS, PLATFORM**

1. **Gemeinhart RA**, Park K, Eigler NL. Covalent grafting of ethylene glycol-butadiene-ethylene glycol block copolymers onto polymeric surfaces by gamma-irradiation. 214<sup>th</sup> Annual ACS Meeting, Las Vegas, NV (September 1997).
2. **Gemeinhart RA**, Park H, Park K. Compressed superporous hydrogels: Compact, fast swelling hydrogel systems. 25<sup>th</sup> Meeting of the Society for Biomaterials, Providence, RI (April 1999).
3. Park K, Chen J, **Gemeinhart RA**, Park H. Superporous hydrogels: Synthesis and applications. The 5<sup>th</sup> International Symposium on Polymers for Advanced Technologies, Waseda University, Tokyo, Japan, (September 1999).
4. Luo D, **Gemeinhart RA**, Anker CJ, Saltzman WM. Silica microparticles for enhancement of gene delivery. 27<sup>th</sup> Meeting of the Society for Biomaterials, Minneapolis, MN (April 2001).
5. **Gemeinhart RA**, Guo C, Saltzman WM. Flow Cytometry analysis of cellular uptake of DNA-silica-SuperFect complexes. 30<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Glasgow, Scotland (July 2003).
6. Kang CE, Gemeinhart EJ, **Gemeinhart RA**. Alignment of Fibroblast by Adhesion Molecules. Midwestern Tissue Engineering Conference, Pittsburgh, PA (April 2004).



7. **Gemeinhart RA**. Novel Phosphate-Containing Hydrogel Scaffolds. Midwestern Tissue Engineering Conference, Pittsburgh, PA (April 2004).
8. Guo C, **Gemeinhart RA**. Evaluation of a plasmid-dendrimer-silica particle ternary transfection system based upon flow cytometry. Sigma Xi Graduate Research Forum, Chicago, IL (April 2004).
9. Tauro JR, **Gemeinhart RA**. Development of a targeting system for cisplatin. Sigma Xi Graduate Research Forum, Chicago, IL (April 2004).
10. Yan X, **Gemeinhart RA**. Release of cisplatin from poly(acrylic acid-co-methyl methacrylate) microparticles. Sigma Xi Graduate Research Forum, Chicago, IL (April 2004).
11. Tauro JR, **Gemeinhart RA**. Evaluation of a MMP targeted peptide for activation of cisplatin. Midwest Pharmaceuticals Graduate Student Meeting, Iowa City, IA (June 2004).
12. Guo C, **Gemeinhart RA**. Assessment of a ternary transfection system. Midwest Pharmaceuticals Graduate Student Meeting, Iowa City, IA (June 2004).
13. Yan X, **Gemeinhart RA**. Physicochemical properties and acute in vivo toxicity of poly(acrylic acid-co-methyl methacrylate). Midwest Pharmaceuticals Graduate Student Meeting, Iowa City, IA (June 2004).
14. Yan X, **Gemeinhart RA**. Development of an Intracranial Microparticulate Drug Delivery System. Biomedical Engineering Society Annual Meeting, Philadelphia, PA (October 2004).
15. Guo C, **Gemeinhart RA**. A silica-based nonviral system for DNA delivery. Sigma Xi Graduate Research Forum, Chicago, IL (April 2005).
16. Yan X, **Gemeinhart RA**. Prolonged release of cisplatin from microparticles. Sigma Xi Graduate Research Forum, Chicago, IL (April 2005).
17. **Gemeinhart RA**, Bare CM, Haasch RT, Gemeinhart EJ. Osteoblast-like cell attachment to and calcification of novel phosphate-containing polymeric substrates. Society for Biomaterials Annual Meeting, Pittsburgh, PA (April 2006).
18. Tauro JR, **Gemeinhart RA**. Hydrogels for Protease-Responsive Chemotherapy. Society for Biomaterials Annual Meeting, Pittsburgh, PA (April 2006).
19. Keskar V, Marion NW, Mao JJ, **Gemeinhart RA**. Human Stem Cell Growth within Superporous Poly(ethylene glycol)-based Hydrogels. Society for Biomaterials Annual Meeting, Chicago, IL (April 2007).
20. Kadakia A, Keskar V, **Gemeinhart RA**, Cho MR. Enhanced Stem Cell Adhesion in a 3-D Hybrid Scaffold for Bone Tissue Engineering, Tissue Engineering and Regenerative Medicine International Society Annual Conference, Toronto, ON (June 2007).
21. Vartak DG, Lee B-S, **Gemeinhart RA**. Dual Specific Targeting of Solid Tumors. Midwest Pharmaceuticals Graduate Student Research Meeting, Kansas City, MO (June 2007).
22. Keskar V, **Gemeinhart RA**. Synthesis of Superporous Hydrogel Scaffolds appropriate for Stem Cell Infiltration and Growth. Midwest Pharmaceuticals Graduate Student Research Meeting, Kansas City, MO (June 2007).
23. Kadakia A, Keskar V, Sun S, Djililian A, **Gemeinhart RA**, Cho MR. A new super porous 3-D hybrid artificial cornea enhances stromal cell adhesion. Biomedical Engineering Society Annual Meeting, Los Angeles, CA (September 2007).
24. Keskar V, **Gemeinhart RA**. Superporous Hydrogels for Stem Cell Infiltration and Differentiation. Biomedical Engineering Society Annual Meeting, St. Louis, MO (October 2008).
25. **Gemeinhart RA**. Developing a Synthetic Mesenchymal Stem Cell Niche. 2<sup>nd</sup> International Congress on Biohydrogels. Viareggio, Italy (November 2009).
26. Köllmer M, **Gemeinhart RA**. Superporous Poly(Ethylene Glycol) Diacrylate Scaffold Supports Osteogenic and Chondrogenic Differentiation of Human Mesenchymal Stem Cells. 5<sup>th</sup> World Congress on Preventive & Regenerative Medicine. Hannover, Germany (October 2010).
27. **Gemeinhart RA**. Superporous Hydrogels as Tissue Engineering Scaffolds. International Symposium on Intelligent Drug Delivery Systems, Seoul, South Korea (March 2012).
28. Zhang Y, **Gemeinhart RA**. Electrophoretic Disruption of Nonspecific Peptide Interactions with MMP-Sensitive Hydrogels. International Symposium on Controlled Release of Bioactive Materials, Quebec City, QC (July 2012).
29. **Gemeinhart RA**. Pathology Targeted Activation of Therapeutics. nanoDDS Symposium, Atlantic City, NJ (December 2012).
30. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant melittin protein loaded microspheres for treatment of high-grade astrocytoma. AICHE Midwest Regional Conference, Chicago, IL (March 2014).
31. Rayahin JE, Buhrman JS, **Gemeinhart RA**. Polymeric modulation of immune cell function. AICHE Midwest Regional Conference, Chicago, IL (March 2014).

32. Zhang Y, Liu Y, **Gemeinhart RA**. Exploring Redox Responsive Polymeric Drug Delivery System for Codelivery of Hydrophobic Drug and Silencing RNAs. Midwest Pharmaceutics Graduate Student Meeting, Chicago, IL (June 2014).
33. Akinrotimi D, Buhrman JS, **Gemeinhart RA**. Loading Proteins Throughout the Network of Glutathione-laden Hydrogels, Multidisciplinary Oral Sciences Training Program Research Forum, Chicago, IL (August 2014).

#### **ABSTRACTS AND PROCEEDINGS, POSTERS**

1. Jo S, **Gemeinhart RA**, Park K. Prevention of protein adsorption on solid surfaces by self-assembled poly(ethylene glycol) grafts. 71<sup>st</sup> ACS Colloid and Surface Science Symposium, Newark, DE (July 1997).
2. **Gemeinhart RA**, Park K, Eigler NL. Polyurethane tubes for controlled drug delivery. The 25<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Las Vegas, NV (June 1998).
3. **Gemeinhart RA**, Park K. Tablet formulation using superporous hydrogel. American Association of Pharmaceutical Scientists Annual Meeting, San Francisco, CA (November 1998).
4. **Gemeinhart RA**, Park H, Park K. Structures of superporous hydrogels in the dried and swollen state. 26<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Boston, MA (June 1999).
5. Cypes SH, **Gemeinhart RA**, Saltzman WM, Giannelis EP. Controlled drug release from polymer-organosilicate nanocomposites. ACS Spring Meeting, San Diego, CA (April 2001).
6. **Gemeinhart RA**, Saltzman WM. Distribution of agents after intravitreal injection of agent-loaded microparticles. 27<sup>th</sup> Meeting of the Society for Biomaterials, Minneapolis, MN (April 2001).
7. Qui Y, **Gemeinhart RA**, Park K. Fast responsive pH-sensitive superporous hydrogels. American Association of Pharmaceutical Scientists Annual Meeting, Denver, CO (October 2001).
8. **Gemeinhart RA**, Luo D, Saltzman WM. Fate of silica microparticles following transfection. American Association of Pharmaceutical Scientists Annual Meeting, Toronto, ON (November 2002).
9. Tauro JR, **Gemeinhart RA**. Characterization and internalization of platinum loaded aminoethyl methacrylate microparticles, University of Illinois College of Pharmacy Riback Poster Forum, Chicago, IL (February 2003).
10. Yan X, **Gemeinhart RA**. Synthesis and characterization of poly(acrylic acid-co-methyl methacrylate) microparticles. University of Illinois College of Pharmacy Riback Poster Forum, Chicago, IL (February 2003).
11. Engelhard HH, Juarez A, Mix M, Duncan H, Vasoya H, **Gemeinhart RA**. A New human glioblastoma cell line that is tumorigenic in nonimmunosuppressed rats, American Association of Neurological Surgeons Annual Meeting, San Diego, CA (April 2003).
12. Kang CE, **Gemeinhart RA**. Engineered polymer surfaces for controlling cellular response. University of Illinois at Chicago Undergraduate Research Symposium, Chicago, IL (April 2003).
13. Kang CE, Lugtu KR, Chumbimune G, **Gemeinhart RA**. Hydrogels for Neural Tissue Engineering. University of Illinois at Chicago Engineering EXPO, Chicago, IL (April 2003).
14. Kang CE, **Gemeinhart RA**. Engineered polymer surfaces for controlling cellular response. 29<sup>th</sup> Meeting of the Society for Biomaterials, Reno, NV (April 2003).
15. Yan X, **Gemeinhart RA**. Poly(acrylic acid-co-methyl methacrylate) microparticles for controlling cisplatin release. Midwest Pharmaceutics Graduate Student Meeting, Chicago, IL (June 2003).
16. Tauro JR, **Gemeinhart RA**. Aminoethyl methacrylate microparticles for controlled drug delivery. Midwest Pharmaceutics Graduate Student Meeting, Chicago, IL (June 2003).
17. **Gemeinhart RA**. Microparticle-Drug Conjugates as Novel Chemotherapeutic Agents. American Brain Tumor Association Biennial Meeting, Chicago, IL (July 2003).
18. Engelhard HH, Juarez A, Duncan H, **Gemeinhart RA**. Characteristics of a human glioblastoma cell line (E297) which is tumorigenic in immunocompetent rats. Society for Neuro-Oncology, Keystone, CO (October 2003).
19. Tauro JR, **Gemeinhart RA**. Synthesis and characterization of cationic microparticles for targeted drug delivery. American Association of Pharmaceutical Scientists Annual Meeting, Salt Lake City, UT (November 2003).
20. Muni NJ, Qian H, Nasser M, Qtaishat NM, **Gemeinhart RA**, Pepperberg DR. Release of neurotransmitter from temperature-sensitive hydrogels. Chicago Universities Bioengineering Industry Consortium Annual Meeting, Chicago, IL (January 2004).
21. Kang CE, **Gemeinhart RA**. Engineered polymer surfaces for controlling cellular response. Chicago Universities Bioengineering Industry Consortium Annual Meeting, Chicago, IL (January 2004).

22. Tauro JR, **Gemeinhart RA**. Development of cationic polymer nanoparticles for targeted delivery. 31<sup>st</sup> International Symposium on Controlled Release of Bioactive Materials, Honolulu, HI (June 2004).
23. Kang CE, **Gemeinhart RA**. Gradients of ECM Molecules affect Morphology. Signal Transduction by Engineered Extracellular Matrices Gordon Research Conference, Lewiston, ME (June 2004).
24. Muni NJ, Qian H, Qtaishat NM, **Gemeinhart RA**, Pepperberg DR. Neurotransmitter release from temperature-sensitive hydrogels. Biomedical Engineering Society Annual Meeting, Philadelphia, PA (October 2004).
25. Tan J, **Gemeinhart RA**, Ma M, Saltzman WM. Improved cell adhesion and proliferation on synthetic phosphonic acid-containing hydrogels. Biomedical Engineering Society Annual Meeting, Philadelphia, PA (October 2004).
26. Guo C, **Gemeinhart RA**. Analysis of Cellular Transfection Enhancement by DNA-Dendrimer-Silica Ternary Systems. Biomedical Engineering Society Annual Meeting, Philadelphia, PA (October 2004).
27. Samaranska A, Diekwisch TGH, Luan X, **Gemeinhart RA**. Photoencapsulation of osteoblast-like cells in PEGDA-co-VPA hydrogels. Biomaterials in Regenerative Medicine: The Advent of Combination Products, Philadelphia, PA (October 2004).
28. Tauro JR, **Gemeinhart RA**. Development of cationic polymer nanoparticles for targeted delivery. University of Illinois College of Pharmacy Riback Poster Forum, Chicago, IL (October 2004).
29. Tauro JR, **Gemeinhart RA**. Peptide-based targeted activation of platinates by matrix metalloproteases. Society for Neuro-Oncology Ninth Annual Meeting, Toronto, ON (November 2004).
30. Hernandez ME, Jasani BK, Kaosaard KN, Khan AR, **Gemeinhart RA**. The Design of a Scaffold for the Growth & Regeneration of Craniofacial Bone. University of Illinois at Chicago Engineering EXPO, Chicago, IL (April 2005).
31. Tauro JR, **Gemeinhart RA**. Matrix Metalloprotease Sensitive Hydrogels for Glioblastoma Multiforme Treatment. 32<sup>nd</sup> International Symposium on Controlled Release of Bioactive Materials, Miami, FL (June 2005).
32. Vartak DG, Tauro JR, **Gemeinhart RA**. Glioma Cell Invasion in Response to Cisplatin Release from Protease-Sensitive Hydrogels. Midwest Pharmaceuticals Graduate Student Research Meeting, Lawrence, KS (June 2005).
33. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Brain Tumor Treatment with an Implantable Cisplatin Delivery System: A Preliminary Report. Midwest Pharmaceuticals Graduate Student Research Meeting, Lawrence, KS (June 2005).
34. Kang CE, Bare CM, Gemeinhart EJ, **Gemeinhart RA**. Combinatorial Approach to Understanding Ionic Polymer-Cell Interactions. Biomedical Engineering Society Annual Meeting, Baltimore, MD (October 2005).
35. Guo C, Song L, Miele L, **Gemeinhart RA**. Preliminary Study of Poly (Lactide-co-Glycolide) Nanoparticles Containing NOTCH-1 siRNA therapeutic for Breast Cancer Treatment. American Association of Pharmaceutical Scientists Annual Meeting, Nashville, TN (November 2005).
36. Vartak DG, Tauro JR, **Gemeinhart RA**. Glioma Cell Invasion in Response to Cisplatin Release from Protease-Sensitive Hydrogels. American Association of Pharmaceutical Scientists Annual Meeting, Nashville, TN (November 2005).
37. Chaterji S, **Gemeinhart RA**. Enhanced Osteoblast Adhesion and Proliferation on Sulfonated Hydrogel Scaffolds. Sigma Xi Research Symposium, West Lafayette, IN (February 2006).
38. Vartak DG, Tauro JR, **Gemeinhart RA**. Matrix Metalloprotease-Sensitive Hydrogels: Targeting Brain Tumor Metastasis. Sigma Xi Research Symposium, Chicago, IL (April 2006).
39. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Development of a Locally Insertable Controlled Release Delivery System for the Treatment Cervical Intraepithelial Neoplasia. Sigma Xi Research Symposium, Chicago, IL (April 2006).
40. Tauro JR, Vartak DG, **Gemeinhart RA**. A Novel Protease-Sensitive Drug Delivery Device. BIO 2006 Innovation Corridor, Chicago, IL (April 2006).
41. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Novel Local Delivery of Cancer Chemotherapeutics for Cervical Cancer. BIO 2006 Innovation Corridor, Chicago, IL (April 2006).
42. Yan X, **Gemeinhart RA**. Novel Drug Delivery System for Controlling Cisplatin Release. BIO 2006 Innovation Corridor, Chicago, IL (April 2006).
43. Yan X, **Gemeinhart RA**. Examination of a Polyacrylate Hydrogel System for Extended Cisplatin Delivery. Society for Biomaterials Annual Meeting, Pittsburgh, PA (April 2006).
44. Bae M, **Gemeinhart RA**. Uniform Microparticulate Hydrogels for Drug Delivery. Midwest Pharmaceuticals Graduate Student Research Meeting, Minneapolis, MN (June 2006).



45. Yan X, **Gemeinhart RA**. A Novel Hydrogel System for Cisplatin Delivery. 33<sup>rd</sup> International Symposium on Controlled Release of Bioactive Materials, Vienna, Austria (July 2006).
46. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Cervical Cancer Treatment with a Locally Insertable Cisplatin Delivery System. 33<sup>rd</sup> International Symposium on Controlled Release of Bioactive Materials, Vienna, Austria (July 2006).
47. Guo C, **Gemeinhart RA**. Physicochemical interaction between DNA and chitosan-coated PLGA nanoparticles. Biomedical Engineering Society Annual Meeting, Chicago, IL (October 2006).
48. Kadakia A, **Gemeinhart RA**, Cho MR. Characterization of 3D semi-interpenetrating network of the collagen/PEGDA composite scaffold. Biomedical Engineering Society Annual Meeting, Chicago, IL (October 2006).
49. Guo C, **Gemeinhart RA**. Adsorption of Chitosan onto Poly (lactide-co-glycolide) Nanoparticles. American Association of Pharmaceutical Scientists Annual Meeting, San Antonio, TX (October 2006).
50. Kadakia A, **Gemeinhart RA**, Cho MR. Characterization of 3D semi-interpenetrating network of the collagen/PEGDA composite scaffold. Indian American Medical Association Annual Meeting, Chicago, IL (November 2006).
51. Bae M, **Gemeinhart RA**. Uniform Microparticulate Hydrogels for Drug Delivery. Society for Biomaterials Annual Meeting, Chicago, IL (April 2007).
52. Keskar V, **Gemeinhart RA**. Synthesis of Superporous Hydrogel Scaffolds for Tissue Engineering. Society for Biomaterials Annual Meeting, Chicago, IL (April 2007).
53. Kidd ME, Sarcu DA, Soong SN, Gemeinhart EJ, **Gemeinhart RA**. Extended Release of Cisplatin from a Polyacrylic Acid Hydrogel for the Treatment of Ovarian Cancer. University of Illinois at Chicago Engineering EXPO, Chicago, IL (April 2007).
54. Kidd ME, Sarcu DA, Soong SN, Gemeinhart EJ, **Gemeinhart RA**. Extended Release of Cisplatin from a Polyacrylic Acid Hydrogel for the Treatment of Ovarian Cancer. University of Illinois at Chicago Undergraduate Research Symposium, Chicago, IL (April 2007).
55. Vartak DG, Lee B-S, **Gemeinhart RA**. Dual Specific Targeting of Tumor Angiogenesis. Sigma Xi Graduate Research Symposium, Chicago, IL (April 2007).
56. Bae M, **Gemeinhart RA**. Uniform Microparticulate Hydrogels For Drug Delivery. Argonne National Laboratory Users Week, Argonne, IL (May 2007).
57. Keskar V, **Gemeinhart RA**. Human Mesenchymal Stem Cell Differentiation within Superporous Hydrogels. American Association of Pharmaceutical Scientists National Biotechnology Meeting, San Diego, CA (June 2007).
58. Bae M, **Gemeinhart RA**. Uniform Microparticulate Hydrogels for Drug Delivery. Midwest Pharmaceutics Graduate Student Research Meeting, Kansas City, MO (June 2007).
59. Vartak DG, Lee B-S, **Gemeinhart RA**. Dual Specific Targeting of Tumor Angiogenesis. 34<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Long Beach, CA (July 2007).
60. Guo C, **Gemeinhart RA**. Intracellular DNA Delivery by Chitosan-coated PLGA Nanoparticles. 34<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Long Beach, CA (July 2007).
61. Keskar V, **Gemeinhart RA**. Novel Porous Scaffold for Tissue Growth and Regeneration. Biomaterials: Biocompatibility/Tissue Engineering Gordon Research Conference. Plymouth, NH (July 2007).
62. Vartak DG, Gemeinhart EJ, **Gemeinhart RA**. Cell Culture Model for *in-vitro* Evaluation of Matrix Metalloproteases Activated Prodrugs. American Association of Pharmaceutical Scientists Annual Meeting, San Diego, CA (November 2007).
63. Li Y, Guo C, **Gemeinhart RA**, Wang ZJ. Substance P conjugated nanoparticle (SPNP) for targeted delivery. American Association of Pharmaceutical Scientists Annual Meeting, San Diego, CA (November 2007).
64. Bae M, **Gemeinhart RA**. Hydrogel Microstructures for Drug Delivery. Midwest Biomedical Engineering Conference. Chicago, IL (April 2008).
65. Desai ES, **Gemeinhart RA**. A Novel Platform for Cell Encapsulation in Regenerative Medicine. Midwest Biomedical Engineering Conference. Chicago, IL (April 2008).
66. Desai ES, **Gemeinhart RA**. A Novel Platform for Cell Encapsulation in Regenerative Medicine. University of Illinois at Chicago Graduate Research Forum, Chicago, IL (April 2008).
67. Keskar V, **Gemeinhart RA**. Superporous Hydrogels For Bone Tissue Engineering. University of Illinois at Chicago Graduate Research Forum, Chicago, IL (April 2008).
68. Aguilar T, Dev V, Brewer M, Segal S, **Gemeinhart RA**. Assay System for Vascular Binding of Drug Delivery Systems. University of Illinois at Chicago Engineering EXPO, Chicago, IL (April 2008).

69. Aguilar T, Dev V, Brewer M, Segal S, **Gemeinhart RA**. Assay System for Vascular Binding of Drug Delivery Systems. Chicago Area Undergraduate Research Symposium, Chicago, IL (April 2008).
70. Kadakia A, Dev V, Gemeinhart RA, Djalilian A, Cho MR. Engineered Hybrid Scaffold for Improved Biointegration of Corneal Implants. Association for Research in Vision and Ophthalmology Annual Meeting, Fort Lauderdale, FL (May 2008).
71. Keskar V, Mohanty PS, Gemeinhart EJ, **Gemeinhart RA**. Cervical Cancer Treatment with a Locally Insertable Cisplatin Delivery System. Abbott Laboratories Pharmaceutical Research and Development Poster Session, Abbott Park, IL (June 2008).
72. Vartak DG, Gemeinhart EJ, **Gemeinhart RA**. Cell Culture Model for *in-vitro* Evaluation of Matrix Metalloproteases Activated Prodrugs. Abbott Laboratories Pharmaceutical Research and Development Poster Session, Abbott Park, IL (June 2008).
73. Desai ES, **Gemeinhart RA**. Macroporous Hydrogel Scaffolds: A Platform for Cell Encapsulation. 35<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, New York, NY (July 2008).
74. Desai ES, **Gemeinhart RA**. Cell Encapsulation in Macroporous Hydrogel Produced by Gas Foaming. Biomedical Engineering Society Annual Meeting, St. Louis, MO (October 2008).
75. Bae M, Divan R, Mancini DC, **Gemeinhart RA**. Hydrogel nanostructure fabrication using electron beam lithography. American Chemical Society Spring Meeting, Salt Lake City, UT (March 2009).
76. **Gemeinhart RA**, Keskar V, Gandhi M. Initial Evaluation of Ingrowth into Superporous Hydrogel Scaffolds. Society For Biomaterials Annual Meeting, San Antonio, TX (April 2009).
77. **Gemeinhart RA**, Keskar V. Porous PEGDA hydrogels promote hMSC survival and eventual differentiability. Experimental Biology 2009, New Orleans, LA (April 2009).
78. Kola S, **Gemeinhart RA**. Anti-Cancer Drug Nanoparticles as Carriers of DNA into Cells. Illinois Math and Science Academy IMSALoquium, Aurora, IL (April 2009).
79. Vantakala K, Bae M, **Gemeinhart RA**. Pore Density in PEGDA Hydrogels in Relation to the Proliferation of NIH/3T3 and hMSCs. Illinois Math and Science Academy IMSALoquium, Aurora, IL (April 2009).
80. Kadakia A, **Gemeinhart RA**, Djalilian A, Cho MR. Collagen Encourages Host Cell Integration within a Superporous Tissue Engineered Cornea. Association for Research in Vision and Ophthalmology Annual Meeting, Fort Lauderdale, FL (May 2009).
81. Vartak DG, **Gemeinhart RA**. Investigation of the effect of integrin  $\alpha\beta3$  binding on the cleavage of matrix metalloprotease-2 substrate by angiogenic endothelial cells. AAPS National Biotechnology Meeting, Seattle, WA (June 2009).
82. Keskar V, **Gemeinhart RA**. Porous PEGDA hydrogels promote hMSC survival and eventual differentiability. Biomaterials: Biocompatibility/Tissue Engineering Gordon Research Conference, Plymouth, NH (July 2009).
83. Keskar V, **Gemeinhart RA**. Attachment of Mesenchymal Stem Cells within PEGDA Superporous Hydrogels. Biomedical Engineering Society Annual Meeting, Pittsburgh, PA (October 2009).
84. Bae M, Divan R, Mancini DC, **Gemeinhart RA**. Hydrogel Nanostructure Fabrication using Electron Beam Lithography. Argonne National Laboratory Center for Nanoscale Materials Annual Users Meeting, Argonne, IL (October 2009).
85. Gemeinhart EJ, Vartak DG, **Gemeinhart RA**. Investigation of integrin  $\alpha\beta3$  and matrix metalloprotease-2 cooperation on the surface of cancer and endothelial cells. American Association of Pharmaceutical Scientists, Los Angeles, CA (November 2009).
86. Köllmer M, Lee M, **Gemeinhart RA**. Superporous Poly(Ethylene Glycol) Diacrylate Scaffold Supports Chondrogenic Differentiation Of Human Mesenchymal Stem Cells, College of Pharmacy Research Day, Chicago, IL (February 2010).
87. Gandhi M, Keskar V, Köllmer M, Gemeinhart EJ, Ju TC, **Gemeinhart RA**. Fabrication, Characterization and In Vivo Evaluation of Superporous Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2010).
88. Thomas KA, Rahman M, **Gemeinhart RA**. Quantification of Protein Uptake in Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2010).
89. Rahman M, **Gemeinhart RA**. Analysis and Optimization of Hydrogel Parameters for Diffusion of Biomolecules, College of Pharmacy Research Day, Chicago, IL (February 2010).
90. Bae M, Divan R, Mancini DC, **Gemeinhart RA**. Direct poly(ethylene glycol) hydrogel nanostructure fabrication using electron beam, College of Pharmacy Research Day, Chicago, IL (February 2010).

91. Köllmer M, **Gemeinhart RA**. Superporous Poly(Ethylene Glycol) Diacrylate Scaffold Supports Chondrogenic Differentiation Of Human Mesenchymal Stem Cells, Midwest Pharmaceutics Graduate Student Meeting, Columbus, OH (June 2010).
92. Bae M, Divan R, Suthar KJ, Mancini DC, **Gemeinhart RA**. Fabrication of PEG hydrogel particles for pharmaceutics using electron beam and optical lithography, 54th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, Anchorage, AK (June 2010).
93. Erb SJ, Köllmer M, Lee B-S, **Gemeinhart RA**. Serum Proteins mediate Cell Attachment within Poly(ethylene glycol) diacrylate (PEGDA) Superporous Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2011).
94. Tang MY, **Gemeinhart RA**. A Tumoroid model demonstrating MMP-2 cleavable peptide release from Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2011).
95. Köllmer M, **Gemeinhart RA**. Comparative Gene Expression Analysis of Human Mesenchymal Stem Cells Cultured on 2D Surfaces and within Superporous Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2011).
96. Ross AE **Gemeinhart RA**. Evaluation of Parameters for Matrix Metalloproteinase-2 Penetration in Poly(ethylene glycol) Diacrylate Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2011).
97. Ross AE Tang MY, Lee B-S, **Gemeinhart RA**. Matrix-Metalloproteinase-2-mediated Drug Release from Poly(ethylene glycol) Diacrylate Hydrogels. Midwest Biomedical Engineering Career Conference, Evanston, IL (April 2011).
98. Cao Y, Buhrman JS, Tang MY, Gemeinhart RA. Design of Genetic Sequences Encoding a Matrix Metalloproteinase-2-Degradable Synthetic Recombinant Protein, IMSA colloquium, Aurora, IL (April 2011)
99. Bae M, Divan R, Mancini DC, **Gemeinhart RA**. Cellular Translocation of Hydrogel Microstructures Fabricated by Optical Lithography, Argonne National Laboratory National Users Meeting, Argonne, IL (May 2011).
100. Ross AE **Gemeinhart RA**. Evaluation of Parameters for Matrix Metalloproteinase-2 Penetration in Poly(ethylene glycol) Diacrylate Hydrogels, American Association of Pharmaceutical Scientists Biotechnology Conference, San Francisco, CA (May 2011).
101. Erb SJ, Köllmer M, Lee B-S, **Gemeinhart RA**. Serum Proteins mediate Cell Attachment within Poly(ethylene glycol) diacrylate (PEGDA) Superporous Hydrogels, Midwest Pharmaceutics Graduate Student Meeting, Madison, WI (June 2011).
102. Ross AE **Gemeinhart RA**. Evaluation of Parameters for Matrix Metalloproteinase-2 Penetration in Poly(ethylene glycol) Diacrylate Hydrogels, Midwest Pharmaceutics Graduate Student Meeting, Madison, WI (June 2011).
103. Tang MY, Ross AE, Lee B-S, **Gemeinhart RA**. Tumoroid Model for Degradation Stimulated Drug Release, Midwest Pharmaceutics Graduate Student Meeting, Madison, WI (June 2011).
104. Zhang Y, Gemeinhart RA, Matrix Metalloproteinase-2 Activable Charged Hydrogel Drug Delivery System. 3rd Annual Symposium of the Illinois Chapter of the Controlled Release Society: Recent Advances in Nanotechnology for Cancer Therapy. Chicago, IL (August 2011).
105. Bae M, Divan R, Mancini DC, Gemeinhart RA, Cellular Translocation of Hydrogel Microstructures Fabricated by Optical Lithography. 3rd Annual Symposium of the Illinois Chapter of the Controlled Release Society: Recent Advances in Nanotechnology for Cancer Therapy. Chicago, IL (August 2011).
106. Zhang Y, Rayahin JE, **Gemeinhart RA**. Use of Pendent Charge with Hydrogels to Modulate Matrix-Metalloprotease-Stimulated Drug Delivery, Polymers in Medicine and Biology, Santa Rosa, CA (September 2011).
107. Köllmer M, Keskar V, **Gemeinhart RA**. Cell-derived Extracellular Matrix Supports Mesenchymal Stem Cell Maintenance within PEGDA Superporous Hydrogels. Polymers in Medicine and Biology, Santa Rosa, CA (September 2011).
108. Tang MY, Ross AE, **Gemeinhart RA**. Tumoroid Model for Degradation Stimulated Drug Release, AAPS Annual Meeting, Washington, DC (November 2011).
109. Köllmer M, Keskar V, **Gemeinhart RA**. Maintenance and Controlled Differentiation of Human Mesenchymal Stem Cells within Superporous Hydrogels, College of Pharmacy Research Day, Chicago, IL (February 2012).
110. Tang MY, Ross AE, Lee BS, **Gemeinhart RA**. Surface Modification of Microparticles for Targeted Delivery. College of Pharmacy Research Day, Chicago, IL (February 2012).
111. Rayahin JE, **Gemeinhart RA**. Surface Modification of Microparticles for Targeted Delivery. College of Pharmacy Research Day, Chicago, IL (February 2012).

112. Zhang Y, **Gemeinhart RA**. Optimization of Matrix Metalloprotease-2 Responsive Hydrogel Drug Delivery System. College of Pharmacy Research Day, Chicago, IL (February 2012).
113. Buhrman JS, Rayahin JE, Köllmer M, **Gemeinhart RA**. Using the glutathione s-transferase/glutathione interaction as a protein anchor in a controlled release delivery system for cancer treatment. College of Medicine Research Day, Chicago, IL (November 2012).
114. Liu Y, Nitsche LC, **Gemeinhart RA**, Sharma V, Szymusiak M, Shen H. Formation of Heterogeneous Toroidal-Spiral Particles – by Drop Sedimentation and Interaction. American Physical Society March Meeting, Baltimore, MD (March 2013).
115. Buhrman JS, Rayahin JE, Köllmer M, **Gemeinhart RA**. Modeling the use of the glutathione s-transferase:glutathione interaction as an anchor in a protein delivery system for cancer treatment., College of Pharmacy Research Day, Chicago, IL (February 2013).
116. Köllmer M, Buhrman JS, Zhang Y, **Gemeinhart RA**. Markers Are Shared Between Adipogenic and Osteogenic Differentiated Mesenchymal Stem Cells, College of Pharmacy Research Day, Chicago, IL (February 2013).
117. Rayahin JE, Buhrman JS, **Gemeinhart RA**. Degradable hyaluronic acid/interleukin-1 receptor antagonist wafers for osteoarthritis, College of Pharmacy Research Day, Chicago, IL (February 2013).
118. Tang MY, Nwanah L, Zhang Y, **Gemeinhart RA**. Multiscale Drug Delivery System: Pluronic F-127 Micelles Encapsulated in PEGDA Hydrogels. College of Pharmacy Research Day, Chicago, IL (February 2013).
119. Zhang Y, Köllmer M, Tang MY, Ramirez EA, **Gemeinhart RA**. Arginine-rich Cell Penetrating Peptide-microRNA Inhibitor Complexes Decrease Glioblastoma Migration Potential. College of Pharmacy Research Day, Chicago, IL (February 2013).
120. Zellander AL, **Gemeinhart RA**, Milani B, Djalilian AR, Makhsous M, Cho M. Designing a Novel Porous Keratoprosthesis to Promote Cornea Cell Ingrowth. Association for Research in Vision and Ophthalmology Annual Meeting, Seattle, WA (May 2013).
121. Zhang Y, Köllmer M, Tang MY, **Gemeinhart RA**. Arginine-rich Cell Penetrating Peptide-microRNA Inhibitor Complexes Decrease Glioblastoma Migration Potential. International Symposium on Controlled Release of Bioactive Materials, Honolulu, HI (July 2013).
122. Tang MY, Nwanah L, Zhang Y, Köllmer M, **Gemeinhart RA**. Multiscale Drug Delivery System: Micelles Encapsulated in Hydrogels. International Symposium on Controlled Release of Bioactive Materials, Honolulu, HI (July 2013).
123. Buhrman JS, Rayahin JE, Köllmer M, **Gemeinhart RA**. Using the glutathione S-transferase:glutathione interaction as a protein anchor in a controlled-release delivery system for cancer treatment. UIC Medical Scientist Training Program Retreat, Chicago, IL (August 2013).
124. Köllmer M, Popescu C, Manda P, Zhou L, **Gemeinhart RA**. Benzocaine Degradation in Oral Disintegrating Tablet Platforms. AAPS Annual Meeting, San Antonio, TX (November 2013).
125. Rayahin JE, Buhrman JS, **Gemeinhart RA**. Melittin fusion protein and hyaluronic acid have augmented anti-inflammatory properties when combined. College of Medicine Research Day, Chicago, IL (November 2013).
126. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant Melittin Protein Therapy for the Treatment of High Grade Astrocytoma. College of Medicine Research Day, Chicago, IL (November 2013).
127. Zhang Y, Liu Y, Buhrman JS, **Gemeinhart RA**. Redox Responsive Micelles for Codelivery of Drugs and Silencing RNAs. College of Pharmacy Research Day, Chicago, IL (March 2014).
128. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant Melittin as Protein Therapy for Treatment of High Grade Astrocytoma. College of Pharmacy Research Day, Chicago, IL (March 2014).
129. Rayahin JE, Buhrman JS, **Gemeinhart RA**. Melittin Fusion Protein and Hyaluronic Acid Have Augmented Anti-Inflammatory Properties When Combined. College of Pharmacy Research Day, Chicago, IL (March 2014).
130. Tang MY, Nwanah L, Zhang Y, Nguyen T, **Gemeinhart RA**. Multiscale Drug Delivery System: Pluronic F-127 Micelles Encapsulated in PEGDA Hydrogels. College of Pharmacy Research Day, Chicago, IL (March 2014).
131. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant melittin protein therapy for the treatment of high grade astrocytoma. Association for Clinical and Translational Sciences (April 2014).
132. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant melittin protein therapy for treatment of high grade astrocytoma. American Physician Scientists Association. Chicago, IL (April 2014).
133. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Recombinant melittin protein therapy for the treatment of high grade astrocytoma. UIC Medical Scientist Training Program Retreat, Chicago, IL (June 2014).

134. Tang MY, Nwanah L, Zhang Y, **Gemeinhart RA**. Multiscale Drug Delivery System: Micelles Encapsulated in Hydrogels. International Symposium on Controlled Release of Bioactive Materials, Chicago, IL (July 2014).
135. Buhrman JS, Rayahin JE, **Gemeinhart RA**. Delivering Recombinant Melittin for Treatment of High Grade Astrocytoma. International Symposium on Controlled Release of Bioactive Materials, Chicago, IL (July 2014).
136. Rayahin JE, Buhrman JS, **Gemeinhart RA**. Melittin-GST fusion protein and hyaluronic acid have augmented anti-inflammatory properties when Combined. International Symposium on Controlled Release of Bioactive Materials, Chicago, IL (July 2014).
137. Zhang Y, Liu Y, Buhrman JS, **Gemeinhart RA**. Exploring Redox Responsive Polymeric Drug Delivery System for Codelivery of Hydrophobic Drug and Silencing RNAs. International Symposium on Controlled Release of Bioactive Materials, Chicago, IL (July 2014).
138. Buhrman JS, Rayahin JE, Zhang Y, Tang MY, **Gemeinhart RA**. Biologically responsive recombinant protein anchors for macromolecular drug delivery. 28<sup>th</sup> Annual Symposium of the Protein Society, San Diego, CA (July 2014).
139. Buhrman JS, Rayahin JE, Zhang Y, Tang MY, **Gemeinhart RA**. Biologically responsive recombinant protein anchors for macromolecular drug delivery. Annual Chicago Biomedical Consortium Meeting, Chicago, IL (October 2014).
140. Rayahin JE, Zhang Y, Buhrman JS, **Gemeinhart RA**. Hyaluronan as a regulator of macrophage function: implications for inflammation and angiogenesis. Annual Meeting of the Society for Glycobiology, Honolulu, HI (November 2014).
141. Buhrman JS, Rayahin JE, Zhang Y, Tang MY, **Gemeinhart RA**. Biologically Responsive Recombinant Protein Anchors for Macromolecular Drug Delivery. College of Medicine Research Day, Chicago, IL (November 2014).
142. Rayahin JE, **Gemeinhart RA**. Hyaluronan as a regulator of macrophage function: implications for inflammation and angiogenesis. Annual Meeting of the American College of Wound Healing and Tissue Repair, Chicago, IL (December 2014).
143. Zhang Y, Liu Y, **Gemeinhart RA**. Charged Group Surface Accessibility Determines Micelleplexes Formation and Cellular Interaction. RNA Nanotechnology Gordon Research Conference (February 2015).
144. Rayahin JE, Zhang Y, Buhrman JS, Tang MY, **Gemeinhart RA**. Hyaluronan as a regulator of macrophage function: implications for inflammation and angiogenesis. College of Pharmacy Research Day, Chicago, IL (February 2015).
145. Tang MY, Zhang Y, Rayahin JE, **Gemeinhart RA**. Understanding Hydrogel Properties to Release Intact Micelles. College of Pharmacy Research Day, Chicago, IL (February 2015).
146. Buhrman JS, Rayahin JE, Zhang Y, Tang MY, **Gemeinhart RA**. Recombinant protein immobilization and controlled-release mediated by versatile, non-covalent protein anchor. College of Pharmacy Research Day, Chicago, IL (February 2015).
147. Zhang Y, Liu Y, Buhrman JS, **Gemeinhart RA**. Controlling miRNA Micelleplex Formation and Disassembly. College of Pharmacy Research Day, Chicago, IL (February 2015).
148. Rayahin JE, **Gemeinhart RA**. Crosslinked Hyaluronan Networks Influence Macrophage Inflammatory and Angiogenic Function. International Society for Hyaluronan Sciences, Florence, IT (June 2015).
149. Rayahin JE, **Gemeinhart RA**. Highly ionic acid: divergent properties of high and low molecular weight hyaluronic acid on macrophage polarization and angiogenic function. International Symposium on Controlled Release of Bioactive Materials, Edinburgh, UK (July 2015).
150. **Gemeinhart RA**, Rayahin JE. Tying up the giant: the influence of cross-linked networks of hyaluronic acid on macrophage function. International Symposium on Controlled Release of Bioactive Materials, Edinburgh, UK (July 2015).

#### **OTHER PUBLICATIONS**

1. **Gemeinhart RA**. Book Review: *Drug Delivery. Engineering Principles for Drug Therapy*, Pharmaceutical Research, 19(10), 1596, 2002.
2. **Gemeinhart RA**. Membership: Innovative Ideas for Growth, Biomaterials Forum (December 2003).
3. **Gemeinhart RA**. Membership: Streamlining New Members Applications, Biomaterials Forum (February 2004).
4. Anesth K, Duncan E, **Gemeinhart RA**, Messersmith P. Updating the SFB Web site, Biomaterials Forum 26(4): 8, 2004.

**PROFESSIONAL ACTIVITIES**

President, Controlled Release Society-Purdue University Student Chapter, 1997-1999

Member, Membership Committee, Society for Biomaterials, 2002

Council Member, Society for Biomaterials, 2003-2008

Chair, Membership Committee, Society for Biomaterials, 2003-2004

Chair, Publications Committee, Society For Biomaterials, 2004-2008

Editor, Society For Biomaterials Website, 2005-2006

Officer, Society For Biomaterials, 2005-2006

Secretary-Treasurer, Ophthalmic Biomaterials Special Interest Group, Society For Biomaterials, 2005-2006

Member, Academic-Industry Partnership Committee for BIO 2006 Chicago Meeting, 2005-2006

Member, Meeting Committee, Society For Biomaterials, 2006-2007

Invited Participant, National Institutes of Health, National Institute of Biomedical Imaging and Bioengineering  
Workshop on the Future of Drug Delivery, 2007

Invited Participant, RIO Bootcamp, Office of Research Integrity, Department of Health and Human Services,  
April 2015

**SYMPOSIA LEADERSHIP**

Moderator, Society For Biomaterials, Drug Delivery Session, 1999, 2002

Moderator, Society For Biomaterials, Proteins and Cells at Interfaces Session, 2003

Poster Award Judge, Frontiers in Pharmacology and Toxicology, 2006

Program Chair, Drug Delivery Special Interest Group, Society For Biomaterials, 2006-2008

Moderator, Society For Biomaterials, Ophthalmic Biomaterials Session, 2007

Organizer, Society For Biomaterials, "Regulation of Biomaterials" Session, 2008

Organizer and Moderator, Society For Biomaterials, "Clinical Applications in Nanomedicine" Panel Discussion  
Session, 2009

Organizer and Moderator, Society For Biomaterials, "Drug Delivery" Session, 2009

Organizer, "Recent Advances in Parenteral Drug Delivery", Controlled Release Society Illinois Chapter  
Symposium, 2009

Organizing Member, Great Lakes cGMP & Regulatory Science Forum, October 2009

Organizer, "Diabetes from Bench to Bedside: Controlled Drug Delivery Progression from the Lab to the Clinic",  
Controlled Release Society Illinois Chapter Symposium, 2010

Moderator, Nanoparticles in Tumor Treatment Symposium, International Symposium on Controlled Release of  
Bioactive Materials, Chicago, IL, July 2014

Moderator, Drug Delivery in Tissue Engineering Symposium, International Symposium on Controlled Release  
of Bioactive Materials, Edinburgh, UK, July 2015

Chair, Delivery of Peptides and Proteins Symposium, International Symposium on Controlled Release of  
Bioactive Materials, Edinburgh, UK, July 2015

**EDITORIAL BOARD MEMBERSHIP**

The Open Organic Chemistry Journal, 2007-2010

Recent Patents on Drug Delivery and Formulation, 2009-current

Journal of Drug Delivery, 2010-current

Journal of Pharmaceutics & Drug Delivery Research, 2011-current

**MANUSCRIPT PEER-REVIEW (Ad Hoc)**

ACS Applied Materials & Interfaces

Advanced Drug Delivery Reviews

Advanced Functional Materials

The AAPS Journal

AAPS PharmSciTech

Acta Biomaterialia

ASHP

Bioconjugate Chemistry

Biomacromolecules

Biomaterials

Biomedical Materials

Bioorganic & Medicinal Chemistry

Biological Procedures Online



BMC Biotechnology  
 Cancer Biology and Therapy  
 Chemical Communications  
 Colloids and Surfaces B: Biointerfaces  
 CRC Press  
 Current Gene Therapy  
 Drug Delivery and Translational Research  
 Environmental Technology  
 e-Polymers  
 European Journal of Pharmaceutics and Biopharmaceutics  
 Expert Opinion on Drug Delivery  
 Expert Reviews on Drug Delivery  
 Gene Therapy  
 Journal of Bioactive and Compatible Polymers  
 Journal of Biomaterials Science: Polymer Edition  
 Journal of Biomedical Materials Research, Part A & B  
 Journal of Colloid and Interface Science  
 Journal of Controlled Release  
 Journal of Nanobiotechnology  
 Journal of Nanopharmaceutics and Drug Delivery  
 Journal of Pediatric Pharmacology and Therapeutics  
 Journal of Pharmaceutics & Drug Delivery Research  
 Journal of Pharmacy and Pharmacology  
 Journal of the American Chemical Society  
 Journal of the Royal Society Interface  
 Journal of Tissue Engineering and Regenerative Medicine  
 Laboratory Investigation  
 Langmuir  
 Life Sciences  
 Macromolecular Biosciences  
 Macromolecules  
 Materials Sciences and Applications  
 Molecular and Cellular Biochemistry  
 Molecular Pharmaceutics  
 Nanotechnology  
 Nature Communications  
 Nature Medicine  
 Peptides  
 Pharmaceutical Research  
 Protein and Peptide Letters  
 Recent Patents in Drug Delivery and Formulation  
 Scientia Pharmaceutica  
 Tissue Engineering, Parts A, B, & C  
 Wiley (Book Review)

#### **ABSTRACT REVIEW (AD HOC)**

Peer Abstract Reviewer, Society For Biomaterials, 1998-2009  
 Peer Abstract Reviewer, American Association of Pharmaceutical Scientists, 2003-2009, 2012  
 Peer Abstract Reviewer, Biotechnology Organization, 2006

#### **GRANT APPLICATION PEER-REVIEW**

United States Army Medical Research Command, Telemedicine and Advanced Technology Research  
 Command, ad hoc (January 2006)  
 North Carolina Biotechnology Center, Multi-Disciplinary Research Grants, ad hoc (January 2006; April 2008)  
 United Kingdom Medical Research Council, Molecular and Cellular Medicine Board, ad hoc (June 2006)  
 United States Army Medical Research Command, Peer Reviewed Medical Research Program, ad hoc (July  
 2006)

United States Department of State, Science Center Program, ad hoc (April 2007)  
 Rapid Access to Intervention Development (RAID), National Cancer Institute, National Institutes of Health, ad hoc (May 2008, November 2008)  
 Biomedical Engineering Panel, Oklahoma Center for the Advancement of Science & Technology (OCAST) Grants, ad hoc (April 2009, April 2010, May 2012, May 2013, May 2014, May 2015; **Chair**)  
 Bioengineering, Technology, and Surgical Sciences (BTSS) Study Section, National Institutes of Health, ad hoc (May 2009, October 2009, February 2010, May 2010, October 2010, May 2011) and **permanent member (July 2011-June 2014)**  
 Biomaterials and Biointerfaces (BMBI) Study Section (2009/10), National Institutes of Health, ad hoc mail review (May 2009)  
 ZRG1 SBIB-N (95) Special Study Section, National Institutes of Health, ad hoc review (May 2009)  
 ZRG1 BST-M (58) Special Study Section, National Institutes of Health, ad hoc mail review (June 2009)  
 Istituto Toscano Tumori (ITT; Italy) Research Grant Program, ad hoc mail review (June 2009)  
 Agency for Science, Technology and Research's (A\*STAR) Biomedical Research Council (BMRC), ad hoc mail review (August 2009)  
 University City Science Center QED Program (Philadelphia Region), ad hoc (August 2009)  
 ZRG1 F09-E (20) Fellowship: Oncological Sciences Study Section, National Institutes of Health, ad hoc (June 2010, October 2010, March 2011, June 2011)  
 Biomedical Engineering Panel, NSF Graduate Research Fellowship Program, National Science Foundation, ad hoc (February 2011 & January 2013)  
 Welcome Trust-DBT India Alliance Grant Program, ad hoc (February 2011)  
 ZRR1 RI-4(01) COBRE 1, Part 2 Study Section, ad hoc (June 2011)  
 Mississippi EPSCoR Seed Grant Program, ad hoc (July 2011)  
 ZRG1 BST-N (50) Special Study Section, National Institutes of Health, ad hoc (April 2012)  
 MacArthur Fellowship, ad hoc (May 2012)  
 2013/05 ZRG1 ETTN-L (02) M, Member Conflict: Nanotechnology and Molecular Substrates in Brain and Retinal Disorders, National Institutes of Health, National Institutes of Health, ad hoc (February 2013)  
 Clinical and Rehabilitative Medicine Research Program (CRM RP), Vision Research Program, Department of Defense, *ad hoc* (March 2014)  
 CDMRP Defense Medical Research and Development Program-Military Training Injuries Teleconference Peer Review, *ad hoc* (June 2014)  
 New York Stem Cell Program 2014: Pre-College Teacher, *ad hoc* (August 2014)  
 Yorkshire Cancer Research Pump Priming Award Program, *ad hoc* (August 2014)  
 American Association of College of Pharmacy, New Investigator Award, *ad hoc* (October 2014)  
 ZEB1 OSR - A (J1) K Award Application Review Study Section, National Institutes of Health, *ad hoc* (December 2014 and July 2015)

#### **PROMOTION AND TENURE PEER-REVIEW**

University of Mississippi, 2011  
 University of Colorado, 2011, 2012  
 Purdue University, 2012  
 Duquesne University, 2014  
 University of Iowa, 2015  
 Oregon State University, 2015

#### **UNIVERSITY AND DEPARTMENT COMMITTEES**

##### ***The University of Illinois at Chicago, University Committees***

Member, Small Animal Subcommittee of the Animal Care Committee, 2003-2004  
 Co-Chair, Small Animal Subcommittee of the Animal Care Committee, 2004-2006  
 Member, Animal Care Committee (IACUC), 2004-2006  
 Member, Research Resource Center Protein Research Laboratory Advisory Committee, 2005-2009  
 Member, Fulbright Campus Review Committee, 2007, 2010  
 Reviewer, Center for Clinical and Translational Science Pilot Grant, 2009  
 Member, Committee for International Admissions Policy, 2010-2011  
 Member, Campus Review Board, Life Science Division, 2011  
 Member, International Admissions Working Group, 2012-2013  
 Member, PASSAGES Advisory Group, 2013-2014

Member, IGNITE Review Panel, 2013  
 Member, Training in RCR Task Force, 2015

***The University of Illinois, College of Engineering Committees***

Member, Bioengineering Department Head Search Committee, 2008-2009, 2010-2011

***The University of Illinois, College of Pharmacy Committees***

Member, Strategic Planning Committee, 2002-2003  
 Member, Student-Faculty Relations Committee, 2003-2004  
 Member, Student Disciplinary Committee, 2004-2006  
 Member, Faculty and Staff Self-Study Subcommittee for ACPE Accreditation, 2006-2007  
 Member, Information Technology Committee, 2007-2010  
 Member, Scholarship and Awards Committee, 2007-2009  
 Member, Rockford Faculty Search Committee (Co-Chair for Pharmaceutics), 2008-2009  
 Member, Graduate Studies Committee, 2009-2014  
 Member, Vahlteich Chair of Medicinal Chemistry Search Committee, 2010-2011  
 Member, Teaching Assistant Policy Committee, 2012  
 Member, Joint Degree Subcommittee of the Curriculum Revision Committee, 2012  
 Member, Executive Committee, 2012-2014  
 Member, Academic Standing Committee, 2012-2016  
 Member, Curriculum Revision Phase II Subcommittee, 2012-2013  
 Member, Staff/Faculty Annual Giving Campaign Committee, 2014-2015

***The University of Illinois, Department of Biopharmaceutical Sciences Committees***

Member, Exam Committee, 2002-2003  
 Member, Graduate Brochure Committee, 2002-2003  
 Chair, Student Oversight Committee, 2002-2005  
 Member, Pharmacokinetics Position Search Committee, 2003-2004  
 Co-Chair, Journal Club Committee, 2003-2005  
 Co-Chair, Seminar Committee, 2003-2005  
 Member, Research Committee, 2003-2005  
 Member, Graduate Committee, 2003-2011, 2013-current  
 Member, Departmental Advisory Committee, 2003-2007, 2009-2011 (*ex officio*)  
 Member, Bi-Laws Committee, 2004-2005, 2008-2009, 2010-2011  
 Co-Chair, Strategic Planning Committee, 2004-2005  
 Chair, Graduate Committee, 2005-2011  
 Member, Drug Delivery Faculty Search Committee, 2005-2008  
 Member, siRNA Faculty Search Committee, 2007

**ADVISING**

***The University of Illinois, Biopharmaceutical Sciences, Postdoctoral Scientists***

1. Milind R. Gandhi, Ph.D. (Drexel University), 2008-2010
2. Thomas Hauk, Ph.D. (University of Stuttgart), 2011

***The University of Illinois, Biopharmaceutical Sciences, Ph.D. Students***

1. Jovita R. Tauro, 2001-2005  
 Thesis Title: Matrix Metalloprotease Sensitive Hydrogels for Delivery of Platinates
2. Chunqiang Guo, 2002-2007  
 Thesis Title: Chitosan-Coated Poly(Lactide-co-Glycolide) Nanoparticles For DNA Delivery
3. Deepali Vartak, 2003-2009  
 Thesis Title: Integrins and Matrix Metalloprotease-2 as Dual Targets in Angiogenesis
4. Vandana Keskar, 2005-2009  
 Thesis Title: Superporous Hydrogels as Novel Scaffolds for Tissue Engineering
5. Melanie Köllmer, 2008-2013  
 Thesis Title: Multi-lineage Differentiation of Mesenchymal Stem Cells for Cell-Based Tissue Engineering
6. Mary Tang, 2010-2015  
 Thesis Title: Drug Encapsulated Micelles in Hydrogel: A Multiscale Drug Delivery System
7. Yu Zhang, 2011-2015  
 Thesis Title: Biodegradable polymeric delivery platform for cancer combination therapy

***The University of Illinois, Biopharmaceutical Sciences, Pharm.D./Ph.D. Students***

1. Jamie E. Rayahin, 2010-current  
Thesis Title: Hyaluronan as a regulator of macrophage function

***The University of Illinois, Biopharmaceutical Sciences, M.D./Ph.D. Students***

1. Jason S. Buhrman, 2011-current  
Thesis Title: Recombinant Anchors for Protein Delivery

***The University of Illinois, Bioengineering, M.S. Students***

1. Aneta Samaranska, 2002-2005  
Thesis Title: Analysis and Biocompatibility of Anionic Hydrogels for Tissue Engineering Applications
2. Christopher Bare, 2002-2005  
Thesis Title: Osteoblast-like Cell Behavior on Surfaces Grafted with Poly(Vinyl Phosphonic Acid-co-Acrylamide)
3. Catherine E. (Clark) Kang, 2003-2005  
Thesis Title: Engineered Polymer Surfaces with Biomolecule Density Gradients for Controlling Cellular Response
4. Mohammad Rahman, 2007-2010  
Thesis Title: Assessment of Hydrogel Parameters in Hydrogel Therapeutics
5. Amy E. Ross, 2010-2011  
Thesis Title: Assessment of Molecular Weight and Loading on Release from Poly(ethylene Glycol) Diacrylate Hydrogels

***The University of Illinois, Biopharmaceutical Sciences, M.S. Student***

1. Somali Chaterji, 2004-2005  
Thesis Title: Enhanced Osteoblast-Like Cell Adhesion and Proliferation Using Sulfated Polymeric Scaffold
2. Xiaoliang Yan, 2001-2007  
Thesis Title: Interactions between Cisplatin and Polyacrylate Delivery Systems
3. Esha S. Desai, 2007-2008  
Thesis Title: Assessment of Parameters Influencing Cell Encapsulation During Macroporous Hydrogel Fabrication
4. Kristin A. (Schwarz) Thomas, 2007-2010  
Thesis Title: Assessment of Protein Adsorption into and Absorption onto Hydrogels

***The University of Illinois, Biopharmaceutical Sciences, Ph.D. Committee Member (Advisor)***

1. Camellia Zamiri (Groves), 1998-2003
2. Carol Kirchhoff (Onyuksel), 1995-2004; part time
3. Hyun Young Jeong (Chiou), 1998-2004
4. Joaquina Mascarenhas (Miele), 2001-2006
5. Jian Lu (Wang), 2006-2008
6. Gwendolyn D'Souza (Miele), 2007-2009
7. Ja Hye Myung (Hong), 2011-2012
8. Yang Yang (Hong), 2012-2013
9. Misuk Bae (Art), 2005-2015
10. Hao-Jui Hsu (Hong), 2014-current

***The University of Illinois, Other Program Ph.D. Committee Member (Advisor; Program)***

1. Nicholas W. Marion (Mao; Bioengineering), 2005-2006
2. Joel K. Wise (Cho; Bioengineering), 2005-2008
3. Arpita Kadakia (Cho; Bioengineering), 2005-2008 (M.D./Ph.D.-Co Advisor)
4. Samantha (Lipsky) Traphagen (Cho; Bioengineering), 2006-2008
5. Devang Gandhi (Rousche; Bioengineering), 2007-2008
6. Vivek Shekhawat (Wimmer; Bioengineering), 2007-2009
7. Peter Koin (Drummond and Hanley; Bioengineering), 2007-2010
8. Ramana Vishnubhotla (Glover; Bioengineering), 2008-2011
9. John Collins (Russell; Bioengineering), 2009-2010
10. Areck Ucuzian (Greisler; Cell Biology, Neurobiology, and Anatomy at Loyola University Chicago, MD/PhD), 2009-2012

11. Kevin Krock (van Breemen; Medicinal Chemistry), 2011-2013
12. Cari Lourniere (David Eddington; Bioengineering), 2012
13. Amelia Zellander (Michael Cho; Bioengineering), 2011-2013
14. Vishal Sharma (Ying Liu, Chemical Engineering), 2012-2013
15. Matthew Bochenek (Jose Oberholzer; Bioengineering), 2011-current
16. Farah Shareef (Michael Cho; Bioengineering, MD/PhD), 2013-2015
17. Magdalena Szymusiak (Ying Liu, Chemical Engineering), 2014-current

***The University of Illinois, Biopharmaceutical Sciences, Preliminary Exam Committee Member***

1. Eunjung Jeon, 2004 (Chair)
2. Joseph McGraw, 2004
3. Jieun Yun, 2005
4. Gwen D'Souza, 2005 (Chair)
5. Ashwini Pai, 2006
6. Cheng-Fen Chen, 2007
7. Sok Bee Lim, 2007 (Chair)
8. Bethany White, 2008 (Chair)
9. Yan Chen, 2008
10. Ying He, 2008
11. Amrita Banerjee, 2009
12. Chelsea Kirkmire, 2009
13. Ja Hye Myung, 2009
14. Yang Yang, 2010
15. Mary Ellen Molloy, 2010 (Chair)
16. Ryan M. Parson, 2011 (Chair)
17. Fatima Khatib, 2011
18. Jia Xie, 2012
19. Xiaoyu Hu, 2013
20. Thao Ngyuen D. Pham, 2013
21. Jose A Suarez del Pino, 2014 (Chair)
22. Matthew Gilbertson, 2015
23. Rui Wang, 2015

***The University of Illinois, Biopharmaceutical Sciences, M.S. Committee Member (Advisor)***

1. Yingjian Li (Wang), 2006-2008

***The University of Illinois, Bioengineering, M.S. Committee Member (Advisor)***

1. S. Thomas King (Khan), 2003-2005
2. Malathi Tamilarasu (Viridi), 2005-2006
3. Luis Gallardo (Wimmer), 2007-2009
4. Eri Iwasaki (Hong), 2013

***The University of Illinois, Biopharmaceutical Sciences, Ph.D. Rotation Students***

1. Jovita Tauro, Fall 2001
2. Xiaoliang Yan, Fall 2001
3. Chunqiang Guo, Spring 2002
4. Joaquina Mascarenhas, Spring 2002
5. Lei Tang, Summer 2002
6. Jingyan Han, Summer 2002
7. Eunjung Jeon, Fall 2002
8. Deepali Vartak, Spring 2002
9. Ashwini Pai, Summer 2004
10. Yingjian Li, Fall 2004
11. Prem Mohanty, Fall 2004
12. Vandana Keskar, Spring 2005
13. Misuk Bae, Fall 2005
14. Tracey Ortega, Fall 2006
15. Kristin Schwarz, Fall 2007
16. Ja Hye Myung, Fall 2007

17. Melanie Köllmer, Summer 2008
18. Yang Yang, Fall 2008
19. Suhair Sunoqrot, Spring 2009
20. Mark Desjardin, Fall 2009
21. Emina Duzo, Fall 2009
22. Mary Tang, Spring 2010
23. Sam Erb, Fall 2010
24. Yu Zhang, Fall 2010
25. David Vaynshteyn, Spring 2011
26. Aditi Jhaveri, Spring 2011
27. Ashutosh Tripathi, Fall 2015
28. Timothy Langridge, Fall 2015

***The University of Illinois, Pharm.D./Ph.D. Rotation Students***

1. Jamie Rayahin (NIH ARRA), Summer 2010

***The University of Illinois, M.D./Ph.D. (MSTP) Rotation Students***

1. Jason Buhrman, Summer 2010

***The University of Illinois, Ph.D. Rotation Students (Program)***

1. Antonio Olivio, Summer 2008 (Anatomy and Cell Biology)

***Visiting Scholars (with MS or PhD)***

1. Vivian Wei-Hua Chen, M.S., Spring 2010, Roosevelt University

***The University of Illinois, Undergraduate Students***

1. Catherine E. (Clark) Kang; BIOE 398; 2002
2. Samir S. Shah; HON 222; 2002-2004
3. Kalpesh G. Patel; HON 222; 2003
4. Tyler E. Ayalin; BIOE 398; 2003-2004
5. William E. Michael; BIOS 399; 2004
6. Puja S. Patel; HON 222; 2004-2005
7. David L. Steinberg; BPS380; 2004-2005
8. Nora A. Richardson; HON 222; 2004-2005
9. Avni A. Shah; BIOS 399; 2004-2005
10. Maria Hernandez; BIOE 398; 2004-2005
11. James E. Song; HON 222; 2004-2005
12. Ki Won Ko; HON 222; 2005-2006
13. Suchal Karkera; HON 222; 2005
14. David A. Sarcu; BIOE 398; 2005-2006
15. Grace Kim; BPS 380; 2006
16. Emeka U. Okafor; HON 222; 2006
17. Christopher J. Drake, BIOE 398, 2006
18. Jesse R. Rickelman, HON 222, 2006
19. Nicole Salata, Volunteer, 2006
20. Tetley Aguilar, BIOE 398, 2007-2008
21. Monique N. Brewer, BIOE 398, 2008
22. Faizan Shakeel, HON 222/BIOE 398, 2007-2008
23. Grace Yu (deceased), HON 222 & NIH ARRA, Fall 2008-Spring 2010
24. Mujahid S. Hussaini, HON 222, Spring 2009
25. Monim Albazzaz, HON 222, Spring 2009
26. Melody Lee, ASCEND Program & NIH ARRA, Spring 2009-Fall 2010
27. Andrew Lee, BIOS 399, Spring 2010
28. Sara Nowacki, BIOE 398, Fall 2010-Spring 2011
29. Jung Min Kim, BIOS 399, Fall 2010
30. My T. Nguyen, BIOS 399, Spring 2011
31. Tejen Soni, BIOE 398, Fall 2011
32. Elizabeth A. Ramirez, HON 222, Fall-2011-Fall 2012
33. Dagmar Sweeney, BIOS 399, Spring 2012-Fall 2012



34. Tuyen Nguyen, BPS 300, Fall 2011-Spring 2013, Spring 2014

**Visiting Undergraduate Students**

1. Rebecca Eisenberg, Summer 2007, Washington University (St. Louis)
2. Lauren Marshall (NSF REU), Summer 2009, Clemson University
3. Megan Hodgson (NIH ARRA), Summer 2010, Johns Hopkins University
4. Adrian Stecula (NIH ARRA), Summer 2010, University of Michigan
5. Jessica Stark (NSF REU), Summer 2010, Cornell University
6. Tracy Chuong (NSF REU), Summer 2011, University of California-Berkeley
7. Marta Wlodarczyk (NSF REU), Summer 2012, Illinois Institute of Technology
8. Lillian Nwanah (NIH MOST), Summer 2012, Summer 2013, Northwestern University
9. Demilade Akinrotimi (NIH MOST), Summer 2014, University of Illinois at Urbana-Champaign
10. Ízola M. Ramalho (Brazil Scientific Mobility Program), Summer 2015, Universidade Estadual da Paraíba (Brazil)
11. Grace Moore (NIH MOST), Summer 2015, Indiana University

**Research Experience for Teachers**

1. Taneka Taylor (NSF RET), Summer 2009, Chicago Public Schools
2. Kristen Kopf (NSF RET), Summer 2010, Elk Grove High School
3. Jacqueline Mimnaugh (NSF RET), Summer 2011, Neuqua Valley High School
4. Shawana Ridley (NSF RET), Summer 2012, Burnside Scholastic Acedemy

**BIOE Senior Design, BIOE 396-397**

1. Catherine E. (Clark) Kang; 2002-2003
2. Kirsteen R. Lugtu; 2002-2003
3. Gary R. Chumbimune; 2002-2003
4. Tyler E. Ayalin; 2003-2004
5. Colin T. Baldwin; 2003-2004
6. Igor Malinkovich; 2003-2004
7. Maria E. Hernandez; 2004-2005
8. Bhumi K. Jasani; 2004-2005
9. Kane N. Kaosaard; 2004-2005
10. Asra R. Khan; 2004-2005
11. David A. Sarcu; 2006-2007
12. Martha E. Kidd, 2006-2007
13. Stephen N. Soong, 2006-2007
14. Tetley Aguilar, 2007-2008
15. Sergey Segal, 2007-2008
16. Vibhooti Dev, 2007-2008
17. Monique N. Brewer, 2007-2008

**University of Illinois, College of Pharmacy, Pharm.D. Student Advisor**

1. Harjit S. Brar; 2007-2010

**Honor's College Fellow (2004-2011)**

1. Thomas Chen; 2004-2005
2. Karmish Goyal; 2004-2005
3. Laura Narbutas; 2004-2005
4. Lisa Konieczny; 2004-2005
5. Maria Hernandez; 2004-2006
6. Sebastian Czerwony; 2005-2006
7. Maria Mula; 2005-2006
8. Emeka U. Okafor; 2005-2007
9. Milan Babic; 2005-2007
10. Sun Lee; 2005-2007
11. Pratik Shah; 2006-2007
12. Sume Joseph; 2006-2007
13. Neil Shah; 2006-2007
14. Christopher Hofer; 2007-2008

15. Megan Hesi; 2007-2008
16. Joyce Jones; 2007-2008
17. Alice Lee; 2007-2008
18. Yuen Trinh; 2007-2008
19. Jennifer Getzelman; 2007-2010
20. Pamela Cabrera; 2008-2010
21. Natasha Ladhani; 2008-2010
22. Dipa Shah; 2008-2010
23. Yijia Luo; 2009-2010
24. David Smith; 2009-2011
25. Fatima Daghash, 2010-2011
26. Henok Mekonen, 2010-2011
27. Bright U. Okoye, 2014
28. Jean Joseph, 2014
29. Dayeon Kang, 2014
30. William J. Heelan, 2014

### ***High School Summer Intern***

1. Nick Ziegler; New Trier High School Class of 2007; June-August 2006
2. Yaseen Jamal, Illinois Mathematics and Science Academy; June-August 2008
3. Karthik Vantakala, Illinois Mathematics and Science Academy; June 2008-May 2009
4. Sushma Kola, Illinois Mathematics and Science Academy; August 2008-May 2009
5. Lydia Matthews, Illinois Mathematics and Science Academy; June 2009
6. Yiyun 'Grace' Cao, Illinois Mathematics and Science Academy; June 2010-May 2011

### **COMPANY AWARDS**

1. MMPe Technologies: 1st Place, 2009 University of Illinois at Chicago Concept2Venture Business Plan Competition
2. MMPe Technologies: 2nd Place, University of Cincinnati's Spirit of Enterprise Competition
3. MMPe Technologies: Best Technology, University of Cincinnati's Spirit of Enterprise Competition
4. MMPe Technologies: 3rd Place Elevator Pitch, University of San Francisco International Business Plan Competition
5. MMPe Technologies: 2nd Place, Chicago Biomedical Consortium Business Plan Competition

### **STUDENT AWARDS**

#### ***The University of Illinois, Biopharmaceutical Sciences, Ph.D. Students***

1. Jovita R. Tauro: 2003 J. Watumull Award
2. Jovita R. Tauro: 2004 Sigma Xi Graduate Student Symposium, 3<sup>rd</sup> Place
3. Jovita R. Tauro: 2005 van Doren Scholar
4. Chunqiang Guo: 2005 van Doren Scholar
5. Deepali Vartak: 2005 AAPS Pharmaceuticals and Drug Delivery Section Travel Award
6. Deepali Vartak: 2006 van Doren Scholar
7. Deepali Vartak: 2006-2007 University Fellow
8. Deepali Vartak: 2006-2007 GlaxoSmithKline-AFPE Pre-doctoral Fellow
9. Chunqiang Guo: 2006 Edward Benes Scholarship
10. Vandana Keskar: 2006 Sigma Xi Graduate Research Symposium, 2<sup>nd</sup> Place
11. Vandana Keskar: 2007 van Doren Scholar
12. Deepali Vartak: 2007 AFPE Pharmaceutical Sciences Graduate Student Recognition Award
13. Vandana Keskar: 2007 Provost's Award for Graduate Research
14. Vandana Keskar: 2007 AAPS National Biotechnology Meeting Travel Award
15. Deepali Vartak: 2007 Paul Sang Award
16. Deepali Vartak: 2007 Sigma Xi Graduate Research Symposium, 1<sup>st</sup> Place
17. Deepali Vartak: 2007-2008 National Association of Chain Drug Stores Foundation-AFPE Pre-Doctoral Fellow
18. Vandana Keskar: 2008 Edward Benes Scholarship
19. Vandana Keskar: 2008 UIC Graduate Research Forum, 2<sup>nd</sup> Place
20. Misuk Bae: 2008 W. C. and May Preble Deiss Award for Biomedical Research
21. Esha S. Desai: 2008 CRS Highlights of Student Posters Session, 1<sup>st</sup> Place

22. Misuk Bae: 2009 University of Illinois at Chicago Chancellor's Student Leadership and Service Award
23. Vandana Keskar: 2009 University of Illinois at Chicago Image of Research Competition, 1<sup>st</sup> Place
24. Misuk Bae: 2009 van Doren Scholarship
25. Deepali Vartak: 2009 Recent Advances in Parenteral Delivery, 3<sup>rd</sup> Place
26. Melanie Köllmer: 2010 College of Pharmacy Research Day Predoctoral Poster Award, 1<sup>st</sup> Place
27. Milind R. Gandhi, Ph.D.: 2010 College of Pharmacy Research Day Postdoctoral Poster Award, 3<sup>rd</sup> Place
28. Kristin (Schwarz) Thomas: 2010 University of Illinois at Chicago Image of Research Competition, 3<sup>rd</sup> Place
29. Controlled Release Society Student Chapter: 2010 Student Chapter of the Year
30. Yu Zhang: 2010-2011 University Fellowship
31. Mary Ye Tang: 2011 Midwest Biomedical Engineering Career Conference Poster Award, 2<sup>nd</sup> Place
32. Amy Ross: 2011 Midwest Biomedical Engineering Career Conference Poster Award, 2<sup>nd</sup> Place
33. Misuk Bae: 2011 College of Pharmacy Image of Research Competition, 2<sup>nd</sup> Place
34. Yu Zhang: 2011 Polymers in Medicine and Biology (ACS Symposium) Poster Award, 3<sup>rd</sup> Place
35. Jamie Rayahin: 2011 Polymers in Medicine and Biology (ACS Symposium) Poster Award, 3<sup>rd</sup> Place
36. Melanie Köllmer: 2012 College of Pharmacy Research Day Predoctoral Poster Award, 3<sup>rd</sup> Place
37. Jason S. Buhrman: 2012 W.C. and May Preble Deiss Award for Biomedical Research
38. Jamie E. Rayahin: 2012-2014 Chancellor's Graduate Research Fellowship
39. Jason S. Buhrman: 2012-2014 Chancellor's Graduate Research Fellowship
40. Jamie E. Rayahin: 2013 W.E. van Doren Scholar
41. Jason S. Buhrman: 2013 W.E. van Doren Scholar
42. Melanie Köllmer: 2013 W.E. van Doren Scholar
43. Mary Y. Tang: 2013 Roquette America, Inc. Student Scholarships
44. Melanie Köllmer: 2013 Roquette America, Inc. Student Scholarships
45. Mary Y. Tang: 2013 College of Pharmacy Image of Research Competition, 1<sup>st</sup> Place
46. Jason Buhrman: 2013-2015 CCTS TL1 Predoctoral Education for Clinical and Translational Scientists (PECTS) Fellowship
47. Yu Zhang: 2013-2014 University Fellowship
48. Yu Zhang: 2013 W.C. and May Preble Deiss Award for Biomedical Research
49. Jamie Rayahin: 2013 College of Medicine Research Forum, Honorable Mention
50. Jamie E. Rayahin: 2014-2015 Chicago Biomedical Consortium Scholar
51. Yu Zhang: 2014-2015 Dean's Scholarship
52. Jason S. Buhrman: The Protein Society Annual Meeting Poster Award, 1<sup>st</sup> Place
53. Jamie Rayahin: The Protein Society Annual Meeting Poster Award, 1<sup>st</sup> Place
54. Yu Zhang: The Protein Society Annual Meeting Poster Award, 1<sup>st</sup> Place
55. Mary Y. Tang: The Protein Society Annual Meeting Poster Award, 1<sup>st</sup> Place
56. Yu Zhang: 2014 University of Illinois at Chicago Image of Research Competition, Honorable Mention
57. Jason S. Buhrman: 2015 College of Pharmacy Research Day Predoctoral Poster Award, 2<sup>nd</sup> Place
58. Jamie Rayahin: 2015 College of Pharmacy Research Day Predoctoral Poster Award, 2<sup>nd</sup> Place
59. Yu Zhang: 2015 College of Pharmacy Research Day Predoctoral Poster Award, 2<sup>nd</sup> Place
60. Mary Y. Tang: 2015 College of Pharmacy Research Day Predoctoral Poster Award, 2<sup>nd</sup> Place
61. Jason S. Buhrman: 2015 W.E. van Doren Scholar
62. Jamie Rayahin: 2015 W.E. van Doren Scholar
63. Yu Zhang: 2015 Charles Wesley Petranek Memorial Scholarship

#### ***The University of Illinois, Professional (Pharm.D.) Students***

1. Jesse R. Rickelman: 2007-2008 AFPE Gateway to Research Scholarship
2. Jamie Rayahin: David J. Riback 2011 Summer Research Fellowship
3. Jamie Rayahin: David J. Riback 2012 Summer Research Fellowship

#### ***The University of Illinois, Undergraduate Students***

1. Catherine E. (Clark) Kang: 2002 Sigma Xi Grant-in-Aid
2. Catherine E. (Clark) Kang: 2003 Top Bioengineering Undergraduate Student
3. Samir Shah: 2003 UIC President's Scholarship
4. Catherine E. (Clark) Kang: Third Place 2003 UIC-URS Poster Competition
5. Catherine E. (Clark) Kang: Second Place UIC-Engineering Expo 2003 Competition
6. Gary R. Chumbimune: Second Place UIC-Engineering Expo 2003 Competition
7. Kirsteen R. Lugtu: Second Place UIC-Engineering Expo 2003 Competition
8. Samir Shah: 2004 Leonard Kotin Memorial Award for Physical Chemistry

9. Maria E. Hernandez: 2005 Honors College Tuition Waiver
10. Maria E. Hernandez: 2005 Caterpillar Scholarship for Academic Excellence
11. David A. Sarcu: Second Place UIC-Engineering Expo 2007 Competition
12. Martha E. Kidd: Second Place UIC-Engineering Expo 2007 Competition
13. Stephen N. Soong: Second Place UIC-Engineering Expo 2007 Competition
14. Faizan Shakeel: 2008 Norman Parker Award
15. Sara Nowacki: Second Place UIC-Engineering EXPO 2011 Competition
16. My Nguyen: 2011 College of Pharmacy Image Competition, 2<sup>nd</sup> Place
17. Demilade Akinrotimi: 2014 Multidisciplinary Oral Sciences Training Program Oral Competition, 2<sup>nd</sup> Place

### **Collaborators/Coauthors**

1. Niraj Muni: 2004 CUBIC Poster Presentation Honorable Mention (Dr. David Pepperberg)
2. Arpita Kadakia, M.D., Ph.D.: 2010 UIC Outstanding Dissertation Award (Co Advisor with Drs. Mike Cho and Ali Djalilian)

### **TEACHING**

#### ***The University of Illinois***

- BIOS 196 Biology Colloquium, 2007: 2 contact hour.
- HON 202 Freshman Orientation Seminar, 2006-2007, 2010: 1-2 contact hour.
- HON 222 Honors Undergraduate Research Assistant, 2002-2010:  
Undergraduate/Professional Student Research.
- PHAR 321 Drug Delivery Systems I, 2003-2010: 4 contact hours:  
Coordinated 2003.
- PHAR 322 Drug Delivery Systems II, 2004-2010: 3 contact hours.
- PMPR 355 Seminar in Pharmacy Research, 2006-2007, 2009-2011: 1 contact hour.
- BPS 380 Research in Biopharmaceutical Sciences, 2004-2006:  
Undergraduate/Professional Student Research.
- BPS 385 Case Studies in Controlled Drug Delivery, 2013, 2015, 30 contact hours  
Coordinated 2013, 2015.
- BIOE 396 Bioengineering Senior Design I, 2002-2004, 2006-2007.
- BIOE 397 Bioengineering Senior Design II, 2003-2005, 2007-2008.
- BIOE 398 Undergraduate Research in Bioengineering, 2003-2010:  
Undergraduate Student Research.
- BIOS 399 Independent Research 2004-2005, 2010, 2012:  
Undergraduate Student Research.
- BIOE 455 Introduction to Tissue Engineering, 2014-2015: 2 contact hours.
- BIOE 460 Materials in Bioengineering, 2002-2008: 2-4 contact hours.
- BPS 470 Introduction to Clinical Pharmacology, 2002: 1 contact hour.
- Che 478 Advances in Biotechnology (Northwestern University), 2009: 2 contact hours.
- PMPC 495 Introduction to Pharmaceutical Biotechnology, 2002: 3 contact hours.
- BPS 501 Biopharmaceutical Sciences I, 2002-2010, 2012-2014: 16 contact hours.  
Coordinated 2008-2010, 2012.
- BPS 507 Drug Discovery, Design and Development, 2005-2007: 2 contact hour.
- BPS 510 Principles of Interfacial Phenomena, 2006: 12 contact hours.
- BPS 518 Controlled Drug Delivery, 2008, 2010, 2013, 2015:  
Coordinated and ~45 contact hours.
- BPS 522 Principles of Polymer Science and Engineering, 2003, 2005, 2007, 2009, 2011, 2014:  
Coordinated and 45 contact hours (2003-2009) and 30 contact hours (2011-2014).
- PhyB 530 Stem Cells, 2009-2010, 2012-2015: 2 contact hours
- BPS 539 Biopharmaceutical Sciences Research Rotation, 2007-2011:  
Graduate Student Research Rotation.
- BIOE 550 Cell and Tissue Engineering, 2003-2010: 6 contact hours.
- OSCI 580 Advanced Oral Sciences, 2005: 1 contact hour.
- BIOE 590 Internship in Bioengineering, 2006:  
Graduate Student Research.
- BPS 593 Experimental Methods in Biopharmaceutical Sciences, 2001-2011:  
Graduate Student Research.

BPS 594 Industrial Perspective of Biopharmaceutical Development, 2006, 2011:

Coordinated 2006 & 2011.

BPS 595 Seminar in Biopharmaceutical Sciences, 2003-2005:

Co-coordinator 2003-2005.

BPS 598 MS Thesis Research, 2004-2010:

Graduate Student Research.

BIOE 598 MS Thesis Research, 2002-2005, 2008-2011:

Graduate Student Research.

BPS 599 Ph.D. Dissertation Research, 2001-2014:

Graduate Student Research.

### **Cornell University**

CHEME 490 Research Project in Chemical Engineering, 1999-2001

### **Purdue University**

IPPH 462 Pharmaceutical Manufacturing, 1994

IPPH 363 Basic Pharmaceutics II, 1995-1999

PHAR 302 Integrated Laboratory II, 1997-1999

### **INVITED LECTURES**

1. Superporous hydrogels: A potential tissue engineering scaffold. Hillenbrand Biomedical Engineering Center Seminar Series, Purdue, University, West Lafayette, IN (April, 24 1998).
2. Distribution of Agents Following Intravitreal Microsphere Injection. Division of Pharmaceutical Sciences, University of Kentucky, Lexington, KY (December 8, 2000).
3. Distribution of Agents Following Intravitreal Microsphere Injection. Department of Pharmaceutics and Pharmacodynamics, University of Illinois, Chicago, IL (March 29, 2001)
4. Distribution of Agents Following Intravitreal Microsphere Injection. Division of Pharmaceutical Sciences, Duquesne University, Pittsburgh, PA (May 1, 2001).
5. Distribution of agents following intravitreal injection. Drug Delivery and Tissue Engineering Seminar Series, School of Chemical Engineering, Cornell. University, Ithaca, NY (March, 30 2001).
6. Transfection of Mammalian Cells: A Novel Modular Approach. Department of Pharmaceutics and Pharmacodynamics, University of Illinois at Chicago, Chicago, IL (April, 10 2002).
7. Polymeric Carriers for Delivery of Biopharmaceuticals. Center for Pharmaceutical Biotechnology, University of Illinois at Chicago, Chicago, IL (October, 31 2002).
8. Polymers for Controlling of Biological Activity. Department of Bioengineering, University of Illinois at Chicago, Chicago, IL (November, 1 2002).
9. Polymeric Control of Cellular Activity. College of Pharmacy, Midwestern University, Downers Grove, IL (April, 17 2003).
10. Addressing Cancer Treatment with Novel Forms of Drug Delivery. SIU Cancer Center, Southern Illinois University, Springfield, IL (December, 3 2004).
11. Novel polymeric therapeutic strategies. Abbott Laboratories, Chicago, IL (July, 14 2005).
12. Hydrogel Therapeutics for Biomimetic Drug Delivery. Samyang Corporation, Daejeon, South Korea (February, 14 2006)
13. Novel methods for biomimetic drug delivery (Invited Plenary). 25<sup>th</sup> Anniversary of the Biotechnology Institute Conference, Chungnam University, Daejeon, South Korea (February, 15 2006).
14. Novel Materials for Tooth Engineering. Chicago Blueprint for Dental Tooth Regeneration. Chicago IL (March, 22 2006).
15. Synthetic Hydrogels as Therapeutic Materials. Society for Biomaterials Annual Meeting Young Investigator Award Plenary Session, Pittsburgh, PA (April 29, 2006).
16. Novel Polymeric Systems for Tissue Regeneration. Department of Orthopedic Surgery, Rush University. Chicago, IL (June 15, 2006).
17. Polymeric materials for controlled drug delivery, deCode Chemistry, Woodridge, IL (June 20, 2006).
18. Biologic Feedback-based Delivery of Cancer Chemotherapeutics. Frontiers of Pharmacology and Toxicology, Chicago, IL (August 29, 2006).
19. Nanoparticle-Complexes for Biomacromolecule Delivery (Invited Plenary). IV Congresso Internacional de Química, Monterrey, Mexico (September 21, 2006).
20. Biologic Inspired Drug Delivery. Acuity Pharmaceuticals, Inc., Chicago, IL (March 7, 2007).

21. Human Stem Cell Growth within Hydrogels Scaffolds. Univeristy of Illinois at Chicago, College of Pharmacy Faculty Retreat, Fontana, WI (May 17, 2007).
22. Biofeedback for Cancer Chemotherapy. Department of Pharmaceutical Sciences, University of Kentucky, Lexington, KY (May 25, 2007).
23. Development of Delivery Vehicles for Anti-Arthritis Drugs. Pfizer. St. Louis, MO (July 17, 2007).
24. Synthetic Biofeedback System for Cancer Chemotherapy. Department of Pharmaceutical Sciences, Southern Illinois University. Edwardsville, IL (September 21, 2007).
25. MMP Activation of Chemotherapy from Hydrogel Therapeutics. CIMA Labs, Inc. Chicago, IL (October 24, 2007).
26. Macroporous Hydrogels Promote Stem Cell Seeding, Growth and Differentiation. Midwest Connective Tissue Workshop, Chicago, IL (December 15, 2007).
27. Bioresponsive systems for drug delivery. Department of Human Nutrition, University of Illinois at Chicago. Chicago, IL (January 18, 2008).
28. A Synthetic Stem Cell Niche: Where We Are and Where We're Going? Joint Seminar between the Colleges of Engineering and Medicine. Chicago, IL (May 1, 2009).
29. Biofeedback systems for drug delivery. Brain Tumor Symposium, University of Illinois at Chicago. Chicago, IL (May 8, 2009).
30. Hydrogel Nanoparticles for Drug Delivery. Experimental Therapeutics and Imaging Program of the UI Cancer Center, University of Illinois at Chicago. Chicago, IL (May 8, 2009).
31. Mesenchymal Stem Cells and Materials: Can we create materials that control their function? Biotechnology Program, Northwestern University, Evanston, IL (June 3, 2009).
32. Designing Bioinspired Therapeutic Materials. Department of Ophthalmology Workshop Series, University of Illinois at Chicago, Chicago, IL (September 18, 2009).
33. Developing a Synthetic Mesenchymal Stem Cell Niche. Biohydrogels 2009 International Symposium, Viareggio, Italy (November 11, 2009).
34. Biomaterials in Cancer and Regenerative Medicine. Medical Sciences Training Program Seminar. Chicago, IL (January 26, 2010).
35. Investigating a Novel Architecture for Tissue Regeneration. Center for Wound Healing and Tissue Regeneration Seminar, Chicago, IL (March 18, 2010).
36. Hydrogel Approaches for Tissue Regeneration and Cancer Chemotherapy. Department of Biomedical Engineering, Illinois Institute of Technology, Chicago, IL (March 26, 2010).
37. Controlling drug release with biofeedback. Center for Pharmaceutical Biotechnology, University of Illinois at Chicago, Chicago, IL (April 6, 2010).
38. Biologic Feedback Regulated Cancer Chemotherapy, Northern Illinois University, DeKalb, IL (September 16, 2011).
39. Superporous Hydrogels as Tissue Engineering Scaffolds, 6<sup>th</sup> International Symposium on Intelligent Drug Delivery Systems, Seoul, South Korea (March 15, 2012).
40. Pathology Targeted Activation of Therapeutics, Nanomedicine and Drug Delivery Symposium (nanoDDS), Atlantic City, NJ (October 28-30, 2012).
41. Multiscale Delivery and Activation of Anticancer Biomolecules. Nanoformulations for Cancer Therapeutics Mini-Symposium, West Lafayette, IN (February 1, 2013).
42. Application of Biomolecular Interactions to Biologic Delivery. Purdue University, West Lafayette, IN (February 5, 2014).
43. Biologic Interactions Control Biopharmaceutical Delivery. Department of Chemical Engineering, University of Illinois at Chicago, Chicago, IL (November 6, 2014).
44. Biomolecular Interactions to Control Biopharmaceutical Delivery. College of Pharmacy, Oregon State University, Corvallis, OR (November 13, 2014).
45. Development of Modular Platform Technology for Biomacromolecule Delivery. Peck Symposium, Purdue University, West Lafayette, IN (February 25, 2015).
46. Controlling Drug Delivery through Bio-Inspired Interactions. Fischell Department of Bioengineering, University of Maryland, College Park, MD (April 3, 2015).
47. Using Biomolecular Interactions to Control Drug Delivery, Yonsei University, Seoul, South Korea (April 15, 2015).
48. PEG-polyester Block Copolymer Micelle Interactions with Biology: From miRNA to Cells, 9<sup>th</sup> International Symposium on Intelligent Drug Delivery Systems, Seoul, South Korea (April 16, 2015).



**GRANT APPLICATIONS, PENDING**

1. Delivery of miRNA for Anti-angiogenic therapy. PI: Gemeinhart (PI: 10% Effort) National Eye Institute, National Institutes of Health (R21 EY025086-01) for funding from September 15, 2014 through March 14, 2016 in the amount of \$393,086 total cost (\$275,000 direct cost).
2. Biomolecular Interactions to Control Protein Stability and Delivery. PI: Gemeinhart (PI: % Effort) National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health (R01 EB020540-01) for funding from April 1, 2015 through March 31, 2019 in the amount of \$1,555,046 total cost (\$1,000,000 direct cost).
3. Activation of Monocytes and Macrophages by Polymeric Micelles. PI: Gemeinhart (PI: 10% Effort) National Institute for Biomedical Imaging and Bioengineering, National Institutes of Health (R21 EB022374-01) for funding from April 16, 2016 through March 31, 2018 in the amount of \$439,694 total cost (\$275,000 direct cost).

**COMPLETED RESEARCH PROJECTS**

1. Microscale Defined Gradients for Determination of Cellular Activity. PI: RA Gemeinhart. Rockefeller Brothers Fund, Charles E. Culpepper Pilot Initiative Grant #03-47 funded research from March 1, 2002 through February 28, 2003, \$25,000 total budget.
2. Microparticle-Drug Conjugates as Novel Chemotherapeutic Agents. PI: RA Gemeinhart. American Brain Tumor Association funding research from July 1, 2002 through June 30, 2003, \$50,000 total budget.
3. Novel Chemotherapy for Pancreatic Cancer. PI: RA Gemeinhart. The University of Illinois at Chicago, Campus Research Board funding research from July 1, 2002 through June 30, 2003, \$14,934 total budget.
4. Malignant Glioma Interaction with Targeted Microparticles. PI: RA Gemeinhart. American Association of Colleges of Pharmacy, New Investigator Program funding research from December 1, 2002 through November 30, 2003, \$10,000 total budget.
5. Targeted Drug Delivery via Microparticle-Drug Conjugates. PI: RA Gemeinhart. (15% Effort) National Institutes of Health, National Eye Institute (R03 EY014357) funding research from May 1, 2003 through April 30, 2006, \$300,000 total budget (\$453,869 Total).
6. Building a Tooth: The Chicago Blueprint for Dental Regeneration. PI TGH Diekwisch (Contributor: 0% Effort) National Institutes of Health, National Institute of Dental and Craniofacial Research (P20 DE017447-01) for funding from January 1, 2006 through May 31, 2006.
7. The UIC 2010 Blueprint for Dental Tissue Regeneration. PIs: TGH Diekwisch, RA Gemeinhart, and A. George. (5% Effort) University of Illinois at Chicago for funding from January 1, 2006 to December 31, 2006 in the amount of \$18,750.
8. Functional Tissue Engineering of Articular Condyle. PI JJ Mao. (Consultant: 0% Effort) National Institutes of Health, National Institute of Biomedical Imaging and Bioengineering (R01 EB002332-01) for funding from August 1, 2003 to July 31, 2007.
9. Understanding and Preventing Tumor Dispersal with Hydrogel Therapeutics. PI: RA Gemeinhart (5% Effort) Submitted to the Vahlteich Award Program of The University of Illinois at Chicago College of Pharmacy for funding from March 15, 2006 through March 14, 2007 in the amount of \$50,000.
10. Controlled Vaginal Delivery for Systemic Gynecological Chemotherapy Treatment. PI RA Gemeinhart (5% Effort) Milheim Foundation for funding from July 1, 2006 through June 30, 2007 in the amount of \$18,182 (\$20,000 Total).
11. Institute for Advanced Pharmaceutical Sciences: Molecular Targets and Drug Screens to Combat Bioterrorism. PI: J Bauman (Investigator: 5%) United States Army Medical Research and Materiel Command (W81XWH-07-1-0445) for funding from July 1, 2007 through December 31, 2008 in the amount of \$888,000 (Total).
12. Regulating Drug Delivery with Polymeric Nanofibers. PI: RA Gemeinhart (5% Effort) National Science Foundation (CBET-0708711) for Funding from July 1, 2007 to December 31, 2008 in the amount of \$100,000 (\$ Direct).
13. Uniform Hydrogel Particles for Drug Delivery. PI: RA Gemeinhart (0% Effort) Argonne National Laboratory for instrument usage and collaboration from April 1, 2008 to March 31, 2009.
14. Development of Hybrid Nanocrystals for Simultaneously Target Delivery of Therapeutic and Bioimaging Agents. PI: T Li. (Consultant: 0% Effort) Department of Defense, Breast Cancer Idea Program (BC050287) as a subcontract through the University of Kentucky for funding from July 1, 2006 to June 31, 2009 in the amount of \$30,000.
15. Understanding and Preventing Tumor Dispersal with Hydrogel Therapeutics. PI: RA Gemeinhart (0% Effort) National Institutes of Health, National Institute of Neurological Disorders and Stroke (R01

- NS055095-01W) for funding from July 27, 2009 to August 31, 2010 in the amount of \$26,400 (\$41,448 Total).
16. Geometrically uniform nanogel as a siRNA carrier. PI RA Gemeinhart (0% Effort) Argonne National Laboratory (CNM 1087) for instrument usage and collaboration from October 1, 2009 to September 30, 2010.
  17. Geometrically uniform nanogel as a siRNA carrier. PI: RA Gemeinhart (0% Effort) Argonne National Laboratory (CNM 22801) for instrument usage and collaboration from October 1, 2010 to October 28, 2011.
  18. Understanding and Preventing Tumor Dispersal with Hydrogel Therapeutics. PI: RA Gemeinhart (35% Effort) National Institutes of Health, National Institute of Neurological Disorders and Stroke (R01 NS055095-01A2) for funding from April 6, 2007 to March 31, 2013 in the amount of \$1,112,127 (\$1,679,882 Total).
  19. Nanogels as siRNA and miRNA carriers. PI: RA Gemeinhart (0% Effort) Argonne National Laboratory (CNM 27574) for instrument usage and collaboration from July 1, 2012 to June 30, 2013.
  20. Dual functional polymeric particles combining photodynamic therapy with chemotherapy for the Treatment of Glioblastoma Multiforme. PI: Y Liu (Co-I: 5% Effort) University of Illinois at Chicago Chancellor's Discovery Fund for funding from June 1, 2012 to May 31, 2014 in the amount of \$50,000 total cost.
  21. Bridge Funding for Understanding and Preventing Tumor Dispersal with Hydrogel Therapeutics for PI: Gemeinhart RA (1 month effort) University of Illinois at Chicago Office of the Vice Chancellor for Research Bridge Fund for funding from August 1, 2012 through July 30, 2013 in the amount of \$30,000 direct cost.
  22. Preliminary Data for Active Release of miRNA from Hydrogel Microparticles. PI: Gemeinhart RA (0.25 month effort) University of Illinois at Chicago Center for Clinical and Translational Science Just-in-Time Award (as part of UL1 RR029879) for funding from September 16, 2012 through September 15, 2013 in the amount of \$15,000 direct cost.
  23. Development of miRNA delivery system for cancer therapy. PI: Gemeinhart RA (1 month effort) University of Illinois at Chicago Vahlteich Research Award for funding from March 15, 2014 through March 14, 2015 in the amount of \$20,000 direct cost.

#### **COMPLETED FELLOWSHIPS AND STUDENT FUNDING**

1. Targeted Delivery for Ocular Anti-angiogenesis. PI: DG Vartak (Advisor: 0% Effort) American Foundation for Pharmaceutical Education (AFPE) Pre-Doctoral Fellowship for funding from September 1, 2006 through August 31, 2007 in the amount of \$6,000.
2. Novel Hybrid Artificial Cornea Optimized for 3-D Cell Inclusion. PI: A Kadakia (Co-I; 5% Effort) Eye Bank Association of America for funding from July 1, 2007 to June 30, 2008 in the amount of \$ 6,087 (Total).
3. Drug Activation from Hydrogel Therapeutics. PI: JR Rickelman (Advisor: 0% Effort) American Foundation for Pharmaceutical Education (AFPE) Gateway To Research Fellowship for funding from September 1, 2007 through August 31, 2008 in the amount of \$6,000.
4. Targeted Delivery for Ocular Anti-angiogenesis. PI: DG Vartak (Advisor: 0% Effort) American Foundation for Pharmaceutical Education (AFPE) Pre-Doctoral Fellowship for funding from September 1, 2007 through August 31, 2008 in the amount of \$6,000.
5. Pharmacological Sciences Training Grant Program. PI: AB Malik. (Preceptor: 0% Effort) National Institutes of Health, National Institute for General Medical Studies (T32 GM070388) funding student fellowships from July 1, 2005 through June 30, 2010.
6. Using Glutathione-laden Hydrogels for Drug Delivery. PI: Jason S. Buhrman (Advisor: 0% Effort) University of Illinois at Chicago Chancellor's Graduate Research Fellow from May 16, 2013 through May 15, 2015 in the amount of \$4,000.
7. Microparticle Delivery of Interleukin-1 Receptor Antagonist to Osteoarthritic Joints. PI: Jamie E. Rayahin (Advisor: 0% Effort) University of Illinois at Chicago Chancellor's Graduate Research Fellow from May 16, 2013 through May 15, 2015 in the amount of \$4,000.
8. Using the Glutathione S-Transferase/Glutathione Interaction as a Protein Anchor in Controlled-Release Delivery Systems. PI: Jason S. Buhrman (Advisor: 0% Effort) Pre-Doctoral Education for Clinical and Translational Scientist (PECTS) Fellow from May 16, 2013 through May 15, 2015 in the amount of \$61,102.

**CURRENT RESEARCH FUNDING**

1. Toroidal-spiral microparticles (TSPs) for co-delivery of multiple compounds of different sizes. PI: Y Liu (Co-I; 0.2 month effort) Division of Materials Research, National Science Foundation (7410964) for funding from August 16, 2014 through August 15, 2017 in the amount of \$390,000 total cost (\$261,656 direct cost).
2. Clinical Translation of Mesenchymal Stem Cell Therapy for Corneal and Ocular Surface Injuries. PI Djalilian AR (Co-I; 2 month effort) Congressionally Directed Medical Research Program, Department of Defense (MR130543) for funding from September 1, 2014 through August 31, 2017 in the amount of \$998,786 (\$639,594 direct cost).