

MATTHEW J. WEBBER, PhD



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VITA

Born in Salt Lake City, Utah in 1983; Married to Theresa Webber since 2009; one child

EDUCATION

Doctor of Philosophy in Biomedical Engineering awarded in 2011

Northwestern University- Evanston, IL 60208

Dissertation Title: "*Self-Assembling Peptide Amphiphile Nanofibers for Angiogenesis and Cardiovascular Disease*"

Advisor: Professor Samuel I. Stupp, Ph.D.- Board of Trustees Professor of Materials Science and Engineering, Chemistry, Medicine, and Director of the Institute for BioNanotechnology in Medicine

Masters of Science in Biomedical Engineering awarded in 2009

Northwestern University- Evanston, IL 60208; GPA: 3.84/4.00 (Cumulative)

Thesis Title: "*Peptide Amphiphile-Cell Coupled Therapies for Cardiovascular Diseases*"

Advisor: Professor Samuel I. Stupp, Ph.D.

Bachelor of Science in Chemical Engineering awarded in 2006

University of Notre Dame- Notre Dame, IN 46556; GPA: 3.64/4.00 (Cumulative) 3.82/4.00 (Major) *cum laude honors*

RESEARCH EXPERIENCE

R. Langer and D.G. Anderson Laboratories- Massachusetts Institute of Technology Cambridge, MA

NIH Postdoctoral Fellow, David H. Koch Institute For Integrative Cancer Research April 2012 to Present

Affiliated research position in Department of Anesthesiology- Boston Children's Hospital and Harvard Medical School

Developing new platforms of materials that exhibit glucose sensing and glucose-responsive drug and insulin release, preparing modified insulin derivatives for glucose-triggered activity, developing methods to deliver type-2 diabetes drugs for long-term glycemic management, developing new routes for supramolecular protein modification, leveraging supramolecular host-guest interactions for therapeutic targeting, and developing vaccine nanoparticles to promote immunity or tolerogenesis for applications in cancer, diabetes, and autoimmune diseases.

S.I. Stupp Laboratory- Northwestern University Chicago, IL

PhD Student October 2006 to November 2011 and *Research Associate* December 2011-April 2012

Developed self-assembling peptide nanostructures for cardiovascular regenerative medicine. Focused specifically on the development of peptide amphiphile systems that could facilitate the delivery and engraftment of therapeutic stem and progenitor cells in ischemic tissue, deliver recombinant growth factors and potentiate endogenous factors to promote angiogenesis, functionally mimic angiogenic growth factors through novel therapies that present mimetic epitopes, respond to the presence of biomarker enzymes with conformational changes in nanostructure and drug release, release physiologically relevant carbon dioxide through the incorporation of ruthenium carbonyl moieties, or reduce inflammatory response through the controlled release of soluble drugs.

A.E. Ostafin Laboratory- Notre Dame Chemical Engineering Department Notre Dame, IN

Undergraduate Researcher August 2004 to May 2005 *also* August 2005 to May 2006

Prepared emulsion- and liposome-templated calcium-phosphate nanoshells, evaluated their formation mechanisms, dye and fluorocarbon loading, and transport through cortical bone.

Z.R. Lu Laboratory- University of Utah Department of Pharmaceutical Chemistry Salt Lake City, UT

Summer Research Intern June 2004 to August 2004 *also* May 2005 to August 2005

Synthesized macromolecular Cysteine-DTPA copolymers chelated with gadolinium as MRI contrast agents for cancer detection and diagnosis and developed pharmacokinetic models using MRI data from their use in mouse tumors.

T. Formosa Laboratory- University of Utah Department of Biochemistry Salt Lake City, UT

Research Assistant May 2003 to August 2003

Designed and conducted experiments for plasmid construction, bacteria sub-cloning, and protein expression and purification in *E. coli*. to determine the mechanism by which proteins function to disassemble DNA nucleosomes.

PUBLICATIONS

h-index=18, Total citations=1453 (Statistics from [Google Scholar](#))

(* indicates equally contributing authors)

First Author Publications:

1. S. Ghanaati*, **M.J. Webber***, R.E. Unger, C. Orth, J.F. Hulvat, S.E. Kiehna, M. Barbeck, A. Rasic, S.I. Stupp, C.J. Kirkpatrick. "Dynamic *in vivo* Biocompatibility of Angiogenic Peptide Amphiphile Nanofibers." *Biomaterials*. 30(31):6202-12; **2009**
2. **M.J. Webber***, J. Tongers*, M.A. Renault, J.G. Roncalli, D.W. Losordo, S.I. Stupp. "Development of Bioactive Peptide Amphiphiles for Therapeutic Cell Delivery." *Acta Biomaterialia*. 6(1):3-11; **2010 (awarded Acta Student Award for article, reprinted in 2015 special issue of Acta Biomaterialia highlighting highly cited and monumental past papers)**
3. **M.J. Webber**, J.A. Kessler, S.I. Stupp. "Emerging Peptide Nanomedicine to Regenerate Tissues and Organs." *Journal of Internal Medicine*. 267(1):71-88; **2010 (article featured on issue cover)**
4. **M.J. Webber**, X. Han, S.N. Murthy, K. Rajangam, S.I. Stupp, J.W. Lomasney. "Capturing the Stem Cell Paracrine Effect Using Heparin-Presenting Nanofibres to Treat Cardiovascular Disease." *Journal of Tissue Engineering and Regenerative Medicine*. 4(8):600-610 **2010**
5. **M.J. Webber***, J. Tongers*, C.J. Newcomb, K. Theres-Marquardt, J. Bauersachs, D.W. Losordo, S.I. Stupp. "Supramolecular Nanostructures that Mimic VEGF as a Strategy for Ischemic Tissue Repair." *Proceedings of the National Academy of Sciences*. 108(33):13438-43 **2011 (article featured on issue cover, highlighted by many popular press reports including Technology Review and The Chicago Tribune, awarded 2012 Dudley Childress Award for paper from NU BME)**
6. **M.J. Webber**, C.J. Newcomb, R. Bitton, S.I. Stupp. "Switching of Self-Assembly in a Peptide Nanostructure With a Specific Enzyme." *Soft Matter*. 7(20):9665-9672 **2011 (article featured as Soft Matter 'Hot Article')**
7. J.B. Matson*, **M.J. Webber***, V.K. Tamboli, B. Weber, S.I. Stupp. "A Peptide-Based Material for Therapeutic Carbon Monoxide Delivery" *Soft Matter*. 8(25):6689-6692 **2012 (article featured in Chemistry World Magazine)**
8. **M.J. Webber***, J.B. Matson*, V.K. Tamboli, S.I. Stupp. "Controlled Release of Dexamethasone From Peptide Nanofiber Gels to Modulate Inflammatory Response." *Biomaterials*. 33(28):6823-6832 **2012**
9. **M.J. Webber**, E.J. Berns, S.I. Stupp. "Supramolecular Nanofibers of Peptide Amphiphiles for Medicine." *Israel Journal of Chemistry*. 53(8):530-554 **2013 (article highlighted on issue cover)**
10. J. Tongers*, **M.J. Webber***, E.E. Vaughan, E. Sleep, M.A. Renault, J.G. Roncalli, E. Klyachko, T. Thorne, Y. Yu, K. Theres-Marquardt, C.E. Kamide, A. Ito, S. Misener, M. Millay, T. Liu, K. Jujo, G. Qin, D.W. Losordo, S.I. Stupp, R. Kishore. "Enhanced Potency of Cell-based Therapy for Ischemic Tissue Repair Using an Injectable Bioactive Epitope-Presenting Nanofiber Support Matrix." *Journal of Molecular and Cellular Cardiology*. 74:231-239 **2014**
11. **M.J. Webber**, O.F. Khan, S.A. Sydlik, B.C. Tang, R. Langer. "A Perspective on the Clinical Translation of Scaffolds for Tissue Engineering." *Annals of Biomedical Engineering*. 43(3):641-656 **2015**
12. D.H.-C. Chou*, **M.J. Webber***, B.C. Tang, A.B. Lin, L.S. Thapa, D. Deng, J.V. Truong, A.B. Cortinas, R. Langer, D.G. Anderson. "Glucose-Responsive Insulin Activity by Covalent Modification with Aliphatic Phenylboronic Acid Conjugates." *Proceedings of the National Academy of Sciences* 112(8):2401-2406 **2015 (article featured in PNAS issue highlights, covered broadly by international press outlets, including newspapers, radio broadcasts, and television reports)**
13. S.A. Sydlik*, S. Jhunjunwala*, **M.J. Webber***, D.G. Anderson, R. Langer. "In Vivo Compatibility of Graphene Oxide With Differing Oxidation State." *ACS Nano* 9(4):3866-3874 **2015**
14. **M.J. Webber**, D.G. Anderson, R. Langer. "Engineering Synthetically Modified Insulin for Glucose-Responsive Diabetes Therapy." *Expert Reviews In Endocrinology and Metabolism* 10(5):483-489 **2015**
15. **M.J. Webber**, D.G. Anderson. "Smart Approaches to Glucose-Responsive Drug Delivery." *Journal of Drug Targeting* **in press**
16. **M.J. Webber***, E.A. Appel*, E.W. Meijer, R. Langer. "Supramolecular Biomaterials." *Nature Materials* **in press**

Other Publications as Contributing Author:

17. S.M. Schmidt, K.A. Moran, A.M. Tweed-Kent, J.L. Slosar, **M.J. Webber**, M.J. McCready, C. Deering, J.M. Veranth, A.E. Ostafin. "Uptake of Calcium Phosphate Nanoshells by Osteoblasts and Their Effect on Growth and Differentiation." Journal of Biomedical Materials Research A. 87(2):418-28; **2008**
18. J. Tongers, **M.J. Webber**, D.W. Losordo. "Bioengineering to Enhance Progenitor Cell Therapies." Texas Heart Institute Journal. 36(2):140-44; **2009**
19. A. Guddati, J. Otero, E. Kessler, G. Aistrup, J. Wasserstrom, X. Han, **M.J. Webber**, S.I. Stupp, J.W. Lomasney, J.A. Kessler. "Embryonic Stem Cells Overexpressing Pitx2c Engraft in Infarcted Myocardium and Improve Cardiac Function." International Heart Journal. 50(6):783-799; **2009**
20. H. Cui, **M.J. Webber**, S.I. Stupp. "Self-assembly of Peptide Amphiphiles: From Molecules to Nanostructures to Biomaterials." Biopolymers. 94(1):1-18; **2010 (article featured on issue cover)**
21. S. Ghanaati, C. Orth, R.E. Unger, M. Barbeck, **M.J. Webber**, A. Motta, C. Migliaresi, C.J. Kirkpatrick. "Fine-Tuning Scaffolds for Tissue Regeneration: Effects of Formic Acid Processing on Tissue Reaction to Silk Fibroin." Journal of Tissue Engineering and Regenerative Medicine. 4(6):464-472; **2010**
22. L.W. Chow*, R. Bitton*, **M.J. Webber**, D. Carvajal, K. Shull, A. Shrama, S.I. Stupp. "A Bioactive Self-assembled Membrane to Promote Angiogenesis." Biomaterials. 32(6):1574-1582 **2011**
23. S. Ghanaati, M. Schlee, **M.J. Webber**, I. Willershausen, M. Barbeck, E. Balic, C. Gortlach, S.I. Stupp, R.A. Sader, C.J. Kirkpatrick. "Evaluation of the Tissue Reaction to a New Bilayered Collagen Matrix In Vivo and its Translation to the Clinic." Biomedical Materials. 6(1):015010 **2011 (selected for feature in annual journal highlights)**
24. S. Ghanaati*, S. Fuchs*, **M.J. Webber**, C. Orth, M. Barbeck, R.L. Reis, C.J. Kirkpatrick. "Dynamic Assessment of the Formation of Vascular Structures for Human Endothelial Progenitor and Osteoblast Co-cultures on Starch-Poly(Caprolactone) in vivo." Journal of Tissue Engineering and Regenerative Medicine. 5(6):e136-143 **2011**
25. S. Ghanaati*, R.E. Unger*, **M.J. Webber**, M. Barbeck, C. Orth, J.A. Kirkpatrick, P. Booms, A. Motta, C. Migliaresi, R.A. Sader, C.J. Kirkpatrick. "Scaffold Vascularization in vivo Driven by Primary Human Osteoblasts in Concert with Host Inflammatory Cells." Biomaterials. 32(32):8150-8160 **2011**
26. A.K. Sharma, M.I. Bury, N.J. Fuller, D.I. Rozkiewicz, P.V. Hota, D.M. Kollhoff, **M.J. Webber**, N. Tapaskar, J.W. Meisner, P.J. Lariviere, S. DeStafano, D. Wang, G.A. Ameer, E.Y. Cheng. "Growth Factor Release from a Chemically Modified Elastomeric Poly(1,8-octanediol-co-citrate) Thin Film Promotes Angiogenesis in vivo." Journal of Biomedical Materials Research A. 100A(3):561-570 **2012**
27. S. Sur*, J.B. Matson*, **M.J. Webber**, C.J. Newcomb, S.I. Stupp. "Photodynamic Control of Bioactivity in a Self-Assembled Matrix." ACS Nano 6(12):10776-10785 **2012**
28. S. Sur*, C.J. Newcomb*, **M.J. Webber**, S.I. Stupp. "Tuning of Supramolecular Mechanics to Guide Neuron Development." Biomaterials 34(20):4749-4757 **2013**
29. B. Chertok, **M.J. Webber**, M.D. Succi, R. Langer. "Drug Delivery Interfaces in the 21st Century: From Science Fiction Ideas to Viable Technologies." Molecular Pharmaceutics 10(10):3531-3543 **2013**
30. S. Sur, M.O. Guler, **M.J. Webber**, E.T. Pashuck, M. Ito, S.I. Stupp, T. Launey. "Synergistic Regulation of Cerebellar Purkinje Neuron Development by Laminin Epitopes and Collagen on an Artificial Matrix." Biomaterials Science 2(6):903-914 **2014**
31. J.E. Dahlman*, C. Barnes*, O. Khan, A. Thiriot, S. Jhunjhunwala, T.E. Shaw, Y. Xing, H.B. Sager, G. Sahay, L. Speciner, A. Bader, R.L. Bogorad, H. Yin, T. Racie, Y. Dong, S. Jiang, D. Seedorf, A. Dave, K. S. Sandu, **M.J. Webber**, T. Novobrantseva, V.M. Ruda, A.K.R. Lytton-Jean, C.G. Levins, B. Kalish, D.K. Mudge, M. Perez, L. Abezgauz, P. Dutta, L. Smith, K. Charisse, M.W. Kieran, K. Fitzgerald, M. Nahrendorf, D. Danino, R.M. Tudor, U.H. von Andrian, A. Akinc, A. Schroeder, D. Panigrahy, V. Kotelianski, R. Langer, D.G. Anderson. "In vivo Endothelial siRNA Delivery Using Polymeric Nanoparticles with Low Molecular Weight." Nature Nanotechnology 9(8):648-655 **2014 (article featured on issue cover)**

32. M.I. Bury, N.J. Fuller, J.W. Meisner, M.D. Hofer, **M.J. Webber**, L.W. Chow, S. Prasad, H. Thakar, X. Yue, V.S. Menon, E.C. Diaz, S.I. Stupp, E.Y. Chang, A.K. Sharma. "The Promotion of Functional Urinary Bladder Regeneration Using Anti-inflammatory Nanofibers." *Biomaterials* 35(34):9311-9321 **2014**
33. O.F. Khan, E.W. Zaia, H. Yin, R. Bogorad, J. Pelet, **M.J. Webber**, I. Zhuang, J.E. Dahlman, R. Langer, D.G. Anderson. "Ionizable Amphiphilic Dendrimer-Based Nanomaterials with Alkyl Chain-Substituted Amines for Tunable siRNA Delivery to the Liver Endothelium In Vivo." *Angewandte Chemie International Edition* 126(52):14625-14629 **2014**
34. E.A. Appel*, M.W. Tibbitt*, **M.J. Webber**, B.A. Mattix, O. Veiseh, R. Langer. "Self-Assembled Hydrogels Utilizing Polymer-Nanoparticle Interactions." *Nature Communications* 6(6295):1-9 **2015 (article highlighted by several international popular press reports)**
35. O.F. Khan, E.W. Zaia, S. Jhunjhunwala, W. Xue, W. Cai, D.S. Yun, C. Barnes, J.E. Dahlman, Y. Dong, J.M. Pelet, **M.J. Webber**, J. Tsosie, T.E. Jacks, R. Langer, D.G. Anderson. "Dendrimer-Inspired Nanomaterials for the In Vivo Delivery of siRNA to Lung Vasculature." *Nano Letters* 15(5):3008-3016 **2015**
36. T.M. O'Shea, **M.J. Webber**, A.A. Aimetti, R. Langer. "Covalent Incorporation of Trehalose within Hydrogels for Enhanced Long-Term Functional Stability and Controlled Release of Biomacromolecules." *Advanced Healthcare Materials* 4(12):1802-1812 **2015**
37. S. Jhunjhunwala, S. Aresta-DaSilva, K. Tang, D. Alvarez, **M.J. Webber**, B.C. Tang, D.M. Lavin, O. Veiseh, J.C. Doloff, S. Bose, A. Vegas, M. Ma, G. Sahay, A. Chiu, A. Bader, E. Langan, S. Siebert, J. Li, D.L. Greiner, P.E. Newburger, U.H. von Andrian, R. Langer, D.G. Anderson. "Neutrophil Responses to Sterile Implant Materials." *PLoS One* 10(9):e0137550 **2015**
38. V. Yesilyurt, **M.J. Webber**, E.A. Appel, C. Godwin, R. Langer, D.G. Anderson. "Injectable Self-Healing Glucose-Responsive Hydrogels with pH-Regulated Mechanical Properties." *Advanced Materials* **in press**

Manuscripts in Review:

39. Y. Dong, J.R. Dorkin, W. Wang, P.H. Chang, **M.J. Webber**, B.C. Tang, I. Abutbul-Ionita, D. Danino, R. Langer, D.G. Anderson. "Poly(glycoamidoamine)-lipid brushes for systemic mRNA delivery in vivo." **in review**
40. **M.J. Webber**, E.A. Appel, L.S. Thapa, B.M. Wheeler, L. Isaacs, R. Langer, D.G. Anderson. "Stabilized and Long-Lasting Insulin Via Host-Guest Supramolecular PEGylation." **in review**
41. Y. Dong, W. Wang, O. Veiseh, E.A. Appel, K. Xue, **M.J. Webber**, B. Tang, X. Yang, G.C. Weir, R. Langer, D.G. Anderson. "Injectable and Glucose-Responsive Hydrogels Based on Boronic Acid-Glucose Complexation." **in review**
42. K.J. Kauffman, **M.J. Webber**, D.G. Anderson. "Materials for Non-Viral Intracellular Delivery of Messenger RNA Therapeutics." **in review**

FUNDING

1. National Institute of Health- Regenerative Medicine Training Program, Northwestern University. NIH 5T90-DA022881 (December 2007-December 2010). Portion of award to MJ Webber: \$128,928
2. Northwestern University Conference Travel Grant to attend the 2010 Tissue Engineering and Regenerative Medicine North America meeting in Orlando, FL. Award amount: \$500
3. National Institute of Health- **Ruth L. Kirschstein National Research Service Award (NRSA)** from National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). NIH F32-DK101335 (September 2013-Present). Award amount: \$155,346

PATENTS AND DISCLOSURES

1. **M.J. Webber**, J. Tongers, D.W. Losordo, S.I. Stupp. "Novel VEGF Mimetic Peptide-based Scaffolds For Therapeutic Angiogenesis And Methods For Their Use." (2011) **World Patent no. WO/2012/149515, US Patent no. 20,130,101,628**
2. D.G. Anderson, D.H.C. Chou, **M.J. Webber**, B.C. Tang, Y. Levi, Y. Zhang, R. Kanasty, A. Vegas, R. Langer. "Insulin Derivatives for Diabetes Treatment." (2013) **World Patent no. WO/2014/093696**

3. D.G Anderson, E.A. Appel, Y. Dong, R. Langer, B.C. Tang, O. Veiseh, W. Wang, **M.J. Webber**, K. Xue. "Polymers, Hydrogels, and Uses Thereof" **US Provisional Application # 63/137,003**
4. D.G. Anderson, R. Langer, **M.J. Webber**, V. Yesilyurt. "Injectable Self-Healing Glucose and pH-Responsive Hydrogels." **MIT Invention Disclosure # 17967**
5. D.G. Anderson, E.A. Appel, R. Langer, **M.J. Webber**. "Supramolecular PEGylation of Protein Therapeutics" **MIT Invention Disclosure # 18077**

AWARDS AND HONORS

- First Place Poster. Notre Dame Undergraduate Research Forum- November, 2004
- Fundamentals of Engineering Certificate- State of Indiana- April, 2006
- Excellence in Undergraduate Research Award. University of Notre Dame Department of Chemical Engineering- May, 2006
- First Place. American Heart Association Chicago Evening of Discovery and Innovation- April, 2010
- American Heart Association, Featured Chicago Researcher, Spring 2011 research salon for AHA donors
- **Acta Biomaterialia Student Award 2011**- Awarded for first authored paper published in Acta Biomaterialia in 2010
- Second Place. Northwestern Biomedical Engineering Research Day, Podium Presentation, 2011
- **Gordon Research Seminar co-Chair**, "Biomaterials and Tissue Engineering" inaugural meeting, Summer 2013
- **2012 Dudley Childress Award**- Best first authored paper by Northwestern BME graduate student

INVITED PRESENTATIONS

1. "Peptide Amphiphile Strategies for Cardiovascular Disease" Massachusetts Institute of Technology- Langer/Anderson Group Seminar. June 22, 2011, Cambridge, MA
2. "Peptide Amphiphile Strategies for Cardiovascular Disease" University of Washington- Stayton Group Seminar. June 29, 2011, Seattle, WA
3. "Peptide Nanostructures for Revascularization of Ischemic Tissue" Northwestern University, Biomedical Engineering Department Seminar Series. January 5, 2012. Evanston, IL
4. "Leveraging Supramolecular Interactions for Disease Therapeutics" University of Utah, School of Dentistry Seminar. June 5, 2014. Salt Lake City, UT
5. "Molecular Engineering of Peptide and Protein Therapeutics" Brandeis University Department of Physics MRSEC Seminar. July 16, 2015. Waltham, MA

SELECTED CONFERENCE PRESENTATIONS AND PROCEEDINGS

(presenter underlined, * indicates equally contributing authors)

1. **M.J. Webber**, A.M. Mohs, Z.R. Lu: "Biodegradable Macro-Molecular Copolymers For Magnetic Resonance Imaging." University of Utah Pharmacuetics and Pharmaceutical Chemistry Seminar. Salt Lake City, Utah **2004**. *Poster & Oral Presentation*
2. **M.J. Webber**, A.E. Ostafin, et. al.: "Calcium Phosphate Nanoshells for Use in Biomedical Applications." Notre Dame Undergraduate Research Forum. Notre Dame, Indiana. **2004**. *Poster (First Place Poster)*
3. S.M. Schmidt, **M.J. Webber**, A.E. Ostafin, et. al.: "Engineering Growth Conditions for Optimal Osteoblast Proliferation, Differentiation, and Calcium Phosphate Deposition in vitro." Midwestern Tissue Engineering Consortium. Cleveland, Ohio. **2005**. *Poster*
4. **M.J. Webber**, X. Han, P.N. Murthy, S.I. Stupp, J.W. Lomasney. "Peptide Amphiphile Networks as Mimics of Stem Cell Therapies for Myocardial Regeneration." The Proceedings of the 8th World Biomaterials Congress. Amsterdam, The Netherlands. **2008**. *Oral Presentation in a Symposium*
5. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, S.I. Stupp, D.W. Losordo. "RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Regenerative Potency of Cell-based Strategies in Ischemic Tissue." Circulation 2008;118:509. American Heart Association Scientific Sessions. New Orleans, Louisiana. **2008**. *Oral Presentation in a Symposium*

6. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, X. Wu, S.I. Stupp, D.W. Losordo. "RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Regenerative Potency of Cell-based Strategies in Ischemic Tissue Regeneration." Lewis Landsberg Research Day. Northwestern University. Chicago, IL. **2009**. *Poster*
7. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, K. Jujo, X. Wu, E. Klyachko, T. Thorne, S.I. Stupp, D.W. Losordo. *RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Therapeutic Potency of Cell-based Strategies in Ischemic Tissue*. Northwestern Cardiovascular Young Investigators Forum, Chicago, IL. **2009**. *Oral Presentation*
8. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, K. Jujo, X. Wu, E. Klyachko, T. Thorne, S.I. Stupp, D.W. Losordo. *RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Therapeutic Potency of Cell-based Strategies in Ischemic Tissue*. Circulation 120: S1023:1024S -c. American Heart Association Scientific Sessions. Orlando, Florida. **2009**. *Poster*
9. **M.J. Webber**,* J. Tongers,* M.A. Renault, J.G. Roncalli, X. Wu, S.I. Stupp, D.W. Losordo. "RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Regenerative Potency of Cell-based Strategies in Ischemic Tissue Regeneration." Lewis Landsberg Research Day. Northwestern University. Chicago, IL. **2010**. *Poster*
10. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, K. Jujo, X. Wu, E. Klyachko, T. Thorne, S.I. Stupp, D.W. Losordo. "RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Therapeutic Potency of Cell-based Strategies in Ischemic Tissue." Clin Res Cardiol 2010: 99: P1268. Annual Convention of the German Society for Cardiology, Mannheim, Germany. **2010**. *Poster (Selected as best section poster, featured in conference highlights session)*
11. **M.J. Webber**,* J. Tongers*, M.A. Renault, J.G. Roncalli, X. Wu, S.I. Stupp, D.W. Losordo. "RGDS-Epitope Presenting Peptide Amphiphile Nanofibers Enhance Regenerative Potency of Cell-based Strategies in Ischemic Tissue Regeneration." American Heart Association Evening of Discovery and Innovation. Chicago, IL. **2010**. *Poster (First Place Poster)*
12. J. Tongers,* **M.J. Webber**,* M.A. Renault, J.G. Roncalli, X. Wu, E. Klyachko, T. Thorne, S.I. Stupp, D.W. Losordo. "Specifically Designed, Bioactive Nanofiber Matrix Supports Cell-based Therapy in Ischemic Tissue Repair." Circulation 2010; 122:A19789. American Heart Association Scientific Sessions. Chicago, IL. **2010**. *Poster*
13. **M.J. Webber**, J. Tongers, D.W. Losordo, S.I. Stupp. "Nanostructures for the Support of Cells in Cardiovascular Disease Strategies." Tissue Engineering and Regenerative Medicine International Society-North America (TERMIS-NA), Orlando, Florida. **2010**. *Oral Presentation in a Symposium*
14. **M.J. Webber**, J. Tongers, C.J. Newcomb, D.W. Losordo, S.I. Stupp. "Nanostructures that Mimic VEGF as a Therapy for Ischemic Tissue." Tissue Engineering and Regenerative Medicine International Society-North America (TERMIS-NA), Orlando, Florida. **2010**. *Oral Presentation in Symposium*
15. **M.J. Webber**, J. Tongers, D.W. Losordo, S.I. Stupp. "Peptide Amphiphile Strategies for Cardiovascular Disease." 15th International Symposium on Recent Advances in Drug Delivery Systems. Salt Lake City, Utah. **2011**. *Poster*.
16. **M.J. Webber**, J. Tongers, D.W. Losordo, S.I. Stupp. "Peptide Amphiphile Strategies for Cardiovascular Disease." Gordon Research Conference: Biomaterials & Tissue Engineering, Holderness, NH. **2011**. *Poster*.
17. **M.J. Webber**, J. Tongers, D.W. Losordo, S.I. Stupp. "Peptide Amphiphile Strategies for Cardiovascular Disease." Chicago Biomedical Consortium, Chicago, IL. **2011**. *Poster. (Selected for feature in Podium Data Blitz)*
18. **M.J. Webber**, D. Chou, B.C. Tang, S. Ravi, S. Jhunjhunwala, D. Lavin, O. Veiseh, R. Langer, D.G. Anderson. "Engineering Glucose-Responsive Materials Through Supramolecular Interactions." Gordon Research Conference: Biomaterials & Tissue Engineering, Holderness, NH. **2013**. *Poster*.
19. **M.J. Webber**, D. Chou, B.C. Tang, E. Appel, S. Jhunjhunwala, D. Lavin, O. Veiseh, R. Langer, D.G. Anderson. "Leveraging Supramolecular Interactions for Diabetes Therapies." 12th US-Japan Symposium on Drug Delivery Systems, Maui, HI. **2013**. *Poster*.
20. **M.J. Webber**, D. Chou, B.C. Tang, E. Appel, A. Lin, L. Thapa, J. Truong, R. Langer, D.G. Anderson. "A Supramolecular Approach to Glucose-Responsive Insulin Therapy." Gordon Research Seminar and Gordon Research Conference on Bioinspired Materials. Newry, ME **2014**. *Poster*.
21. **M.J. Webber**, D.G. Anderson, R. Langer, S.I. Stupp. "Molecular Engineering of Peptide and Protein Therapeutics" American Chemical Society Bi-Annual Meeting, Symposium on Molecular Engineering of Peptide Assembly, Division of Colloids. Denver, CO **2015**. *Oral Presentation (Selected for feature in conference-wide Sci-Mix)*
22. **M.J. Webber**, E.A. Appel, D. Chou, B.C. Tang, R. Langer, D.G. Anderson. "Molecular Engineering of Protein Therapeutics." Gordon Research Conference on Biomaterials and Tissue Engineering. Girona, Spain **2015**. *Poster*

SERVICE ACTIVITIES

- American Institute of Chemical Engineers- Notre Dame Student Chapter: *Fall 2003-Fall 2006*
- Biomedical Engineering Society- Northwestern University Graduate Students: *Fall 2006-Spring 2012*
 - Vice President and Recruiting Coordinator- *Fall 2006-Fall 2007*
- Stupp Lab Biomaterials Subgroup Organizer- *Spring 2010-Spring 2012*
 - Developed weekly agenda, ran meetings, organized minutes
- Institute for Bionanotechnology in Medicine Journal Club Founder and Organizer- *Spring 2007-Spring 2012*
- **Gordon Research Seminar co-Chair** for “Biomaterials and Tissue Engineering” inaugural meeting, Summer 2013
 - Developed GRS program and helped to secure NIH and NSF funding for the GRS/GRC meeting to support travel awards
- Established, organized, and facilitated a quarterly Langer Lab Mentorship Seminar designed to provide opportunities for postdocs in the lab to ask Prof. Langer questions about relevant topics, called “*Conversations with Bob*”
- Langer/Anderson Group Diabetes Subgroup Leader: Summer 2013-Present
- Frequent peer reviewer for the following journals (listed in approximate order of frequency):
 - Acta Biomaterialia, Scientific Reports, Elsevier Academic Press, Angewandte Chemie International Edition
- **National Academy of Sciences Roundtable on Biomedical Engineering Materials and Applications**, Invited Participant, Topic: “Materials for Cell Delivery and Control of Bioactivity.” April 13, 2015, Washington, D.C.
- 2016 World Biomaterials Congress, **Chair of New Frontiers Symposium on “Supramolecular Biomaterials”** based on a submitted proposal to the conference organizers. Montreal, QC Canada, May 2016

TEACHING EXPERIENCE

Completion of the MIT Teaching Certificate Program in 2013

Certificate program offered by the Dean of Graduate Education designed to develop and improve teaching skills based in best-practices education research on how to construct courses, lectures, and evaluations in ways that maximize student learning and achieve learning objectives.

Instruction of courses:

Northwestern University, Spring 2007- Biomedical Engineering Department (BME250, Undergraduate): *Biothermodynamics Teaching Assistant* to Course Instructor: Professor Susan Olds, Ph.D.

Responsibilities: In-class lectures on statistical entropy, protein folding, membrane systems, and self-assembly systems. Led a weekly discussion section, graded homework, and provided tutoring at weekly office hours.

Massachusetts Institute of Technology, Fall 2012- Chemical Engineering Department (10.444 & 10.644, Combined Advanced Undergraduates and Graduates): *Frontiers in Therapeutics and Drug Delivery Teaching Assistant* to Course Instructor: Professor Daniel G. Anderson, Ph.D.

Responsibilities: Class administrative activities, student advising, coordination of some guest lectures.

Massachusetts Institute of Technology, Spring 2013- Chemical Engineering Department (10.29, Advanced Undergraduates): *Biological Engineering Project Laboratories Associate Instructor* with Professor Daniel G. Anderson, Ph.D.

Responsibilities: Class organization and planning, research project design and outline, day-to-day supervision and advising of two teams of 3 advanced undergraduate students completing supervised laboratory projects, planning and assistance with laboratory-related work, report grading, assistance with presentations, reports, and final projects.

Massachusetts Institute of Technology, Fall 2013- Biology Department (7.342, Advanced Undergraduates): *Advanced Undergraduate Seminar: Cell-Material Crosstalk: Engineering Cell-Instructive Biomaterials Lead Instructor* along with Dr. Danya Lavin, PhD (postdoctoral fellow and colleague)

Responsibilities: Course planning, organization, and design to prepare a seminar series for advanced undergraduates focusing on primary literature to introduce the concept of biomaterials to undergraduates in biology, bioengineering, chemical engineering, and materials science. Led in-class discussions, problem-solving sessions, assigned and reviewed homework, provided support for final projects and presentations. Program supported from Howard Hughes Medical Institute for advancing educational initiatives.

Massachusetts Institute of Technology, Spring 2014- Chemical Engineering Department (10.26, Advanced Undergraduates): *Chemical Engineering Project Laboratories*
Associate Instructor with Professor Daniel G. Anderson, Ph.D.

Responsibilities: Class organization and planning, research project design and outline, day-to-day supervision and advising of two teams of 3 advanced undergraduate students completing supervised laboratory projects, planning and assistance with laboratory-related work, report grading, assistance with presentations, reports, and final projects.

Massachusetts Institute of Technology, Fall 2014- Biology Department (7.343, Advanced Undergraduates): *Advanced Undergraduate Seminar: Cell-Material Crosstalk: Engineering Cell-Instructive Biomaterials*
Lead Instructor along with Dr. Danya Lavin, PhD (postdoctoral fellow and colleague)

Responsibilities: Course planning, organization, and design to prepare a seminar series for advanced undergraduates focusing on primary literature to introduce the concept of biomaterials to undergraduates in biology, bioengineering, chemical engineering, and materials science. Led in-class discussions, problem-solving sessions, assigned and reviewed homework, provided support for final projects and presentations. Program supported from Howard Hughes Medical Institute for advancing educational initiatives.

Massachusetts Institute of Technology, Spring 2015- Chemical Engineering Department (10.443 & 10.643, Combined Advanced Undergraduates and Graduates): *Future Medicine: Drug Delivery, Therapeutics, and Diagnostics*
Teaching Assistant to Course Instructor: Professor Daniel G. Anderson, Ph.D.

Responsibilities: Class administrative activities, student advising, coordination of some guest lectures.

TRAINEES SUPERVISED

- Chris Oustwani- Northwestern University Undergraduate BME, 2008-2009. Last known location: Northwestern Med School
- Antonio Feliciano- Northwestern University Undergraduate Materials Science, 2009-2010. Last known location: R&D scientist, Amgel Inc, San Francisco, CA
- Vibha Tamboli- Northwestern University Masters of Science In Biotechnology, 2011-2012. Last known location: Cardiff University PhD program
- Benjamin Weber- University of Mainz, Germany Masters in Chemistry exchange program at Northwestern, 2011-2012. Last known location: University of Mainz, Germany
- Shanthi Ravi- Massachusetts Institute of Technology Undergraduate Bioengineering, 2012-2013 Last known location: MIT
- Sandra Seppalainen - Massachusetts Institute of Technology Undergraduate Bioengineering, 2013 Last known location: MIT
- Crystal McKenzie- Massachusetts Institute of Technology Undergraduate Chemical Engineering, 2013 Last known location: Leadership Training program, L'Oreal
- Yining Zhang- Massachusetts Institute of Technology Undergraduate Chemical Engineering, 2013-2014 Last known location: BME PhD Program, Univ. of Michigan
- Michelle Teplensky- Massachusetts Institute of Technology Undergraduate Chemical Engineering, 2013-2014 Last known location: Cambridge (UK) PhD Program (**Gates Fellowship recipient and regional/national AICHE research award**)
- Sonia Holar- Massachusetts Institute of Technology Undergraduate Chemical Engineering, 2014-2015 Last known location: MIT
- Colin Godwin- Massachusetts Institute of Technology Chemical Engineering, 2014- Last known location: MIT
- Amy Lin- Massachusetts Institute of Technology Research Technician, 2013-2015 Last known location: UNC Pharmacy
- Jonathan Truong- Massachusetts Institute of Technology Research Technician, 2014 Last known location: Takeda
- Lavanya Thapa- Massachusetts Institute of Technology Research Technician, 2014- Last known location: MIT
- Ioannis Kipouros- Massachusetts Institute of Technology Research Technician, 2015- Last known location: MIT