

## SARAH C. HEILSHORN

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### ACADEMIC POSITIONS

- 4/14 - current *Associate Professor with Tenure, Lee Otterson Faculty Scholar, William R. and Gretchen B. Kimball University Fellow in Undergraduate Education*  
Departments of Materials Science & Engineering and (by courtesy) Chemical Engineering and (by courtesy) Bioengineering  
**Stanford University**
- 1/15 - 3/15 *Visiting Professor*, School of Aerospace, Mechanical & Mechatronic Engineering  
**University of Sydney**
- 8/15 - 12/15 *Visiting Professor*, Institute for Molecular Engineering  
**University of Chicago**
- 8/06 - 3/14 *Assistant Professor*, Department of Materials Science & Engineering  
**Stanford University**
- 6/04 - 7/06 *Post-doctoral Scholar*, Department of Molecular & Cell Biology  
**University of California, Berkeley**
- 7/02 - 9/02 *Visiting Scholar*, Department of Polymer Science  
**Kyoto Institute of Technology**

### EDUCATION

- 9/98 - 6/04 *Doctor of Philosophy, Chemical Engineering*, June 2004  
*Master of Science, Chemical Engineering*, Minor: Biology, June 2000  
**California Institute of Technology**
- 9/93 - 6/98 *Bachelor of Chemical Engineering*, Minors: German, International Affairs, June 1998  
**Georgia Institute of Technology**

### EDITORIAL POSITIONS

- 2017 Issue Editor, *Biomaterials Science*, Emerging Investigators Issue, RSC
- 2016 - current Editorial Advisory Board, *APL Bioengineering*, American Institute of Physics
- 2015 - current Associate Editor, *Science Advances*, AAAS - Science
- 2015 - current Editorial Advisory Board, *ACS Biomaterials Science & Engineering*, ACS
- 2015 Guest Issue Editor, *Current Opinion in Solid State and Materials Science*, Elsevier
- 2014 Guest Issue Editor, *Acta Biomaterialia*, Elsevier
- 2013 - current Editorial Board, *Biomaterials Science*, Royal Society of Chemistry (RSC)
- 2012 - current Editorial Advisory Board, *Biomacromolecules*, American Chemical Society (ACS)

### SELECTED SCIENTIFIC LEADERSHIP ACTIVITIES

- 2016 - 2018 Chair for the Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices
- 2016 - current Materials Research Society, Programming Development Committee
- 2015 - 2016 Co-chair, Fall 2016 international meeting of the Materials Research Society
- 2014 - 2016 Vice Chair for the Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices
- 2013 Scientific Advisory Committee, Tissue Engineering & Regenerative Medicine International Society (TERMIS) Americas Meeting

2012	Organizing Committee, 6th International Conference on Bioengineering and Nanotechnology, Society for Biological Engineering
2012	Report co-author, NSF panel on funding priorities for biomaterials science
2010 - current	National Institutes of Health, grant reviewer
2010 - current	Materials Research Society, symposia organizer for annual international conference
2008 - current	U.S. Department of Energy, Basic Energy Sciences, grant reviewer
2006 - current	National Science Foundation, grant reviewer

### SELECTED HONORS

- **Young Talent Award**, State Key Laboratory of Molecular Engineering of Polymers, China, 2018.
- **Royal Society of Chemistry**, elected fellow, 2017.
- **American Institute for Medical and Biological Engineering**, elected fellow, 2016.
- **University of Sydney International Research Collaboration Award**, 2015.
- **3M Non-Tenured Faculty Award**, 2014.
- **Colburn Lectureship**, Chemical & Biomolecular Engineering, University of Delaware, 2012.
- Featured in *Discover magazine*, March 2012 and September 2010 issues.
- **China-America Frontiers of Engineering**, National Academy of Engineering, invitee, 2011.
- **New Innovator Award**, National Institutes of Health, 2009.
- **Doctoral New Investigator Award**, American Chemical Society, Petroleum Research Fund, 2009.
- **CAREER Award**, National Science Foundation, 2009.
- Two **UK-US Stem Cell Collaboration Development Awards**, British Consulate, 2008, 2009.
- Two **National Academies Keck Futures Initiative Seed Grants**, 2006, 2008.
- **Translational Nanoscience Young Scholar Award**, Biomedical Nanoscience Initiative, University of Southern California, 2008.
- **Hellman Faculty Scholar**, 2008.
- **Powell Foundation Fellow**, Stanford University, 2006.
- **Terman Faculty Fellow**, Stanford University, 2006.
- **Gabilan Faculty Fellow**, Stanford University, 2006.
- **Everhart Lectureship**, California Institute of Technology, 2003.
- **East Asia Summer Institute Fellowship**, National Science Foundation, 2002.
- **International P.E.O. Fellowship for Women in Advanced Degree Programs**, 2002.
- **Graduate Student Fellowship**, National Science Foundation, 1998.

### PUBLICATIONS *Google Scholar Metrics: h-index = 36, i10-index = 64, total citations > 4,500*

1. de la Zerda A, Kratochvil MJ, Suhar NA, Heilshorn SC. Bioengineering strategies to probe T cell mechanobiology. *APL Bioengineering*, 2018; accepted and in print.
2. Foster A, Dewi R, Cai L, Hou L, Strassberg Z, Alcazar C, Heilshorn SC, Huang N. Protein-engineered hydrogels enhance the survival of induced pluripotent stem cell-derived endothelial cells for treatment of peripheral arterial disease. *Biomaterials Science*, 2018; accepted and in print.
3. Madl CM and Heilshorn SC. Bio-orthogonal strategies for engineering extracellular matrices. *Advanced Functional Materials*, 2018; accepted and in print.
4. Nagy N, de la Zerda A, Kaber G, Johnson PY, Hu KH, Kratochvil MJ, Yadava K, Zhao W, Cui Y, Navarro G, Annes JP, Wight TN, Heilshorn SC, Bollyky PL, Butte MJ. Hyaluronan content governs tissue stiffness in pancreatic islet inflammation. *Journal of Biological Chemistry*, 2018; 2:567-578.
5. Madl CM and Heilshorn SC. Engineering hydrogel microenvironments to recapitulate the stem cell niche. *Annual Review of Biomedical Engineering*, 2018; accepted and in print.
6. Qin X, Chen H, Yang H, Wu H, Zhao X, Wang H, Chour T, Neofytou E, Ding D, Daldrup-Link H, Heilshorn SC, Li K, Wu JC. Photoacoustic imaging of embryonic stem cell-derived cardiomyocytes in living hearts with ultrasensitive semiconducting polymer nanoparticles. *Advanced Functional Materials*, 2018; 1:1704939.

7. Krajina B, Proctor A, Schoen AP, Spakowitz AJ, Heilshorn SC. Biotemplated synthesis of inorganic materials: an emerging paradigm for nanomaterial synthesis inspired by nature. *Progress in Materials Science*, 2018; 91:1-23.
8. Madl CM, LeSavage B, Dewi R, Dinh C, Stowers R, Khariton M, Lampe K, Nguven D, Chaudhuri O, Enejder A, Heilshorn SC. Maintenance of neural progenitor cell stemness in 3D hydrogels requires matrix remodelling. *Nature Materials*, 2017; 16:1233–1242. \*This article was featured on the cover.
9. Krajina B, Tropinin C, Zhu A, DiGiacomo P, Sonnenburg JL, Heilshorn SC, Spakowitz AJ. Dynamic light scattering microrheology reveals multiscale viscoelasticity of polymer gels and precious biological materials. *ACS Central Science*, 2017; 3:1294-1303.
10. Paul A, Stührenberg M, Chen S, Rhee D, Lee W, Odom T, Heilshorn SC, Enejder A. Micro- and nano-patterned elastin-like polypeptide hydrogels for stem cell culture. *Soft Matter*, 2017; 13:5665-5675.
11. Steele A, Cai L, Truong V, Edwards B, Goldstone A, Eskandari A, Mitchell A, Marquardt L, Foster A, Cochran J, Heilshorn SC, Woo J. A novel protein-engineered hepatocyte growth factor analog released via a shear-thinning injectable hydrogel enhances post-infarction ventricular function. *Biotechnology & Bioengineering*, 2017; 114:2379–2389.
12. Dubbin K., Tabet A., Heilshorn SC. Quantitative criteria to benchmark new and existing bio-inks for cell compatibility. *Biofabrication*, 2017; 9: 044102.
13. Fernandes-Cunha G, Lee HJ, Kumar A, Krevmerman A, Heilshorn SC, Myung D. Immobilization of growth factors to collagen surfaces using pulsed visible light. *Biomacromolecules*, 2017; 18:3185-3196.
14. Wang H, Zhu D, Paul A, Cai L, Enejder A, Yang F, Heilshorn SC. Covalently adaptable elastin-like protein–hyaluronic acid (ELP–HA) hybrid hydrogels with secondary thermoresponsive crosslinking for injectable stem cell delivery. *Advanced Functional Materials*, 2017; 27:1605609. \*This article was featured on the cover.
15. \*DiMarco R. \*Hunt D, Dewi R, Heilshorn SC. Improvement of paracellular transport in the Caco-2 drug screening model using protein-engineered substrates. *Biomaterials*, 2017; 129:152-162.
16. \*Zhu D, \*Wang H, Trinh P, Heilshorn SC, Yang F. Elastin-like protein-hyaluronic acid (ELP-HA) hydrogels with decoupled mechanical and biochemical cues for cartilage regeneration. *Biomaterials*, 2017; 127:132-140.
17. Madl C, Heilshorn SC. Tyrosine-selective functionalization for bio-orthogonal cross-linking of engineered protein hydrogels. *Bioconjugate Chemistry*, 2017; 28(3):724-730. \*This article was featured on the cover.
18. Mascharak S, Benitez P, Proctor A, Madl C, Hu K, Dewi R, Butte M, Heilshorn SC. YAP-dependent mechanotransduction is required for proliferation and migration on native-like substrate topography. *Biomaterials*, 2017; 115:155-166.
19. Foster A., Marquardt L., Heilshorn SC. The diverse roles of hydrogel mechanics in injectable stem cell transplantation. *Current Opinion in Chemical Engineering*, 2017; 15:15-23.
20. Parisi-Amon A, Lo D, Montoro D, Dewi R, Longaker M, Heilshorn SC. Protein-nanoparticle hydrogels that self-assemble in response to peptide-based molecular-recognition. *ACS Biomaterials Science & Engineering*, 2017; 3:750-756.
21. Luan A, Zielins ER, Wearda T, Atashroo DA, Blackshear CP, Raphel J, Brett EA, Flacco J, Alyono MC, Momeni A, Heilshorn S, Longaker MT, Wan DC. Dynamic rheology for the prediction of surgical outcomes in autologous fat grafting. *Plastic and Reconstructive Surgery*, 2017; 3:517-524.
22. Cai L, Dewi RE, Goldstone AB, Cohen JE, Steele AN, Woo J, Heilshorn SC. Regulating stem cell secretome using injectable hydrogels with in situ network formation. *Advanced Healthcare Materials*, 2016; 5:2758-2764.
23. Dubbin K, Hori Y, Lewis KK, Heilshorn SC. Dual-stage crosslinking of a gel-phase bioink improves cell viability and homogeneity for 3D bioprinting. *Advanced Healthcare Materials*, 2016; 5:2488-2492. \*This article was featured on the cover.

24. Marquardt L, Heilshorn SC. Design of injectable materials to improve stem cell transplantation. *Current Stem Cell Reports*, 2016; 2:207-220.
25. Madl C, Heilshorn SC. Probing the metabolomics of stem cell differentiation with biomaterials. *Chem*, 2016; 2:192-194.
26. Quarta M, Brett J, DiMarco R, DeMorree A, Boutet S, Chacon R, Gibbons M, Garcia V, Su J, Shrager J, Heilshorn SC, Rando T. An artificial niche preserves the quiescence of muscle stem cells and enhances their therapeutic efficacy. *Nature Biotechnology*, 2016; 34:752-759.
27. Haugh M, Heilshorn SC. Integrating concepts of material mechanics, ligand chemistry, dimensionality, and degradation to control differentiation of mesenchymal stem cells. *Current Opinion in Solid State Materials Science*, 2016; 20:171-179.
28. Madl CM, Katz L, Heilshorn SC. Bio-orthogonally crosslinked, engineered protein hydrogels with tunable mechanics and biochemistry for cell encapsulation. *Advanced Functional Materials*, 2016; 26:3612-3620.
29. Raphael J, Karlsson J, Galli S, Wennerberg A, Lindsay C, Haugh M, Pajarinen J, Goodman SB, Jimbo R, Andersson M, Heilshorn SC. Engineered protein coatings to improve the osseointegration of dental and orthopaedic implants. *Biomaterials*, 2016; 83:269-282.
30. Raphael J, Holodniy M, Goodman S, Heilshorn SC. Multifunctional coatings to simultaneously promote osseointegration and prevent infection of orthopaedic implants. *Biomaterials*, 2016; 84:301-314.
31. \*Benitez P, \*Mascharak S, Proctor A, Heilshorn SC. Use of Protein-Engineered Fabrics to Identify Design Rules for Integrin Ligand Clustering in Biomaterials. *Integrative Biology*, 2016; 8:50-61.
32. Shamloo A., Mohammadaliha N., Heilshorn SC., Bauer AL. A comparative study of collagen matrix density effect on endothelial sprout formation using experimental and computational approaches. *Annals of Biomedical Engineering*, 2015; 44:929-941.
33. Wang H, Heilshorn SC. Adaptable hydrogel networks with reversible linkages for tissue engineering. *Advanced Materials*, 2015; 27(25):3717-3736. \*This article was featured on the cover.
34. DiMarco R, Dewi RE, Bernal G, Kuo C, Heilshorn SC. Protein-engineered scaffolds for in vitro 3D culture of primary adult intestinal organoids. *Biomaterials Science*, 2015, 3:1376-1385.
35. Cai L, Dewi RE, Heilshorn SC. Injectable hydrogels with in situ double network formation enhance retention of transplanted stem cells. *Advanced Functional Materials*, 2015; 25(9):1344-1351. \*This article was featured on the cover.
36. Romano N, Lampe K, Xu H, Ferreira M, Heilshorn SC. Microfluidic gradients reveal enhanced neurite outgrowth but impaired guidance within 3D matrices with high integrin ligand densities. *Small*, 2015; 11:722-730.
37. Ferreira MM, Dewi RE, Heilshorn SC. Microfluidic analysis of extracellular matrix-bFGF crosstalk on primary human myoblast chemoproliferation, chemokinesis, and chemotaxis. *Integrative Biology*, 2015; 7:569-579.
38. Madl CM, Heilshorn SC. Matrix interactions modulate neurotrophin-mediated neurite outgrowth and pathfinding. *Neural Regeneration Research*, 2015; 10(4):514-517.
39. Chang DT, Chai R, DiMarco R, Heilshorn SC, Cheng A. Protein-engineered hydrogel encapsulation for 3D culture of murine cochlea. *Otology & Neurotology*, 2015; 36(3):531-538.
40. \*Romano N, \*Madl CM, Heilshorn SC. Matrix RGD ligand density and L1CAM-mediated Schwann cell interactions synergistically enhance neurite outgrowth. *Acta Biomaterialia*, 2015; 11(1):48-57.
41. Huggins KNL, Schoen AP, Arunagirinathan MA, Heilshorn SC. Multi-site functionalization of protein scaffolds for bimetallic nanoparticle templating. *Advanced Functional Materials*, 2014; 24(48):7737-44.
42. Wang H, Cai L, Paul A, Enejder A, Heilshorn SC. Hybrid elastin-like polypeptide-polyethylene glycol (ELP-PEG) hydrogels with improved transparency and independent control of matrix mechanics and cell ligand density. *Biomacromolecules*, 2014; 15(9):3421-3428.

43. Greenwood-Goodwin M, Teasley ES, Heilshorn SC. Dual-stage growth factor release within 3D protein-engineered hydrogel niches promotes adipogenesis. *Biomaterials Science*, 2014; 2:1627-1639. \*This article was featured on the cover.
44. VanDersarl JJ, Mehraeen S, Schoen A, Heilshorn SC, Spakowitz A, Melosh NA. Rheology and simulation of 2-dimensional clathrin protein network assembly. *Soft Matter*, 2014; 10:6219-6227.
45. Mulyasmita W, Cai L, Dewi R, Jha A, Ullmann SD, Luong RH, Huang NF, Heilshorn SC. Avidity-controlled hydrogels for injectable co-delivery of induced pluripotent stem cell-derived endothelial cells and growth factors. *Journal of Controlled Release*, 2014; 191:71-81.
46. Barker TH, Heilshorn SC. Biological biomaterials structure, function, property design across molecular-nano-micro-macro scales. *Acta Biomaterialia*, 2014; 10(4):1487.
47. Xu H, Ferreira MM, Heilshorn SC. Small-molecule axon-polarization studies enabled by a shear-free microfluidic gradient generator. *Lab on a Chip*, 2014; 14(12): 2047-2056.
48. McLaughlin LM, Xu H, Carden SE, Fisher S, Reyes M, Heilshorn SC, Monack DM. A microfluidic-based genetic screen to identify microbial virulence factors that inhibit dendritic cell migration. *Integrative Biology*, 2014; 6: 438-449.
49. Madl CM, Mehta M, Duda GN, Heilshorn SC, Mooney DJ. Presentation of BMP-2 mimicking peptides in 3D hydrogels directs cell fate commitment in osteoblasts and mesenchymal stem cells. *Biomacromolecules*, 2014; 15(2):445-455.
50. Cai L, Dinh CB, Heilshorn SC. One-pot synthesis of elastin-like polypeptide hydrogels with grafted VEGF-mimetic peptides. *Biomaterials Science*, 2014; 2: 757-765.
51. Cai L, Heilshorn SC. Designing ECM-mimetic materials using protein engineering. *Acta Biomaterialia*, 2014; 10(4): 1751-1760.
52. DiMarco R, Su J, Yan K, Dewi R, Kuo CJ, Heilshorn SC. Engineering of three-dimensional microenvironments to promote contractile behavior in primary intestinal organoids. *Integrative Biology*, 2014; 6(2):127-142. \*This article was featured on the cover.
53. Mulyasmita W, Cai L, Hori Y, Heilshorn SC. Avidity-controlled delivery of angiogenic peptides from injectable molecular-recognition hydrogels. *Tissue Engineering, Part A*, 2014; 20(15-16):2102-2114.
54. Shamloo A, Manchandia M, Ferreira M, Mani M, Nguyen C, Jahn T, Weinberg K, Heilshorn SC. Complex chemoattractive and chemorepellent Kit signals revealed by direct imaging of murine mast cells in microfluidic gradient chambers. *Integrative Biology*, 2013; 5:1076-1085.
55. Chung C, Pruitt BL, Heilshorn SC. Spontaneous cardiomyocyte differentiation of mouse embryoid bodies regulated by hydrogel crosslink density. *Biomaterials Science*, 2013; 1(10): 1082-1090.
56. Schoen AP, Cordella N, Mehraeen S, Arunagirinathan MA, Spakowitz AJ, Heilshorn SC. Dynamic remodeling of disordered protein aggregates is an alternative pathway to achieve robust self-assembly of nanostructures. *Soft Matter*, 2013; 9(38): 9137-9145.
57. Schoen AP, Hommersom B, Heilshorn SC, Leunissen ME. Tuning colloidal association with specific peptide interactions. *Soft Matter*, 2013; 9(29): 6781-6785.
58. Lampe KJ, Antaris AL, Heilshorn SC. Design of 3D engineered protein hydrogels for tailored control of neurite growth. *Acta Biomaterialia*, 2013; 9:5590-5599.
59. Parisi-Amon A, Mulyasmita W, Chung C, Heilshorn SC. Protein-engineered injectable hydrogel to improve retention of transplanted adipose-derived stem cells. *Advanced Healthcare Materials*, 2013; 2:428-432.
60. Xu H, Heilshorn SC. Microfluidic investigation of BDNF enhanced neural stem cell chemotaxis in CXCL12 gradients. *Small*, 2013; 9:585-595.
61. Benitez P, Sweet JA, Fink H, Chennazhi KP, Nair SK, Enejder A, Heilshorn SC. Sequence-specific crosslinking of electrospun elastin-like protein preserves bioactivity and native-like mechanics. *Advanced Healthcare Materials*, 2013; 2:114-118.

62. Schoen AP, Huggins KNL, Heilshorn SC. Engineered clathrin nanoreactors provide tunable control over gold nanoparticle synthesis and clustering. *Journal of Materials Chemistry B*, 2013; 1:6662-6669.
63. Huang NF, Dewi RE, Okogbaa J, Lee JC, Rufaihah A, Heilshorn SC, Cooke JP. Chemotaxis of human induced pluripotent stem cell-derived endothelial cells. *American Journal of Translational Research*, 2013; 5(5):510-520.
64. Chung C, Lampe K, Heilshorn SC. Tetrakis (hydroxyl methyl) phosphonium chloride as a covalent crosslinking agent for cell encapsulation within protein-based hydrogels. *Biomacromolecules*, 2012; 13:3912-3916.
65. Chung C, Anderson E, Reijo Pera R, Pruitt BL, Heilshorn SC. Hydrogel crosslinking density regulates temporal contractility of human embryonic stem cell-derived cardiomyocytes in 3D cultures. *Soft Matter*, 2012; 8:10141-10148.
66. DiMarco RL, Heilshorn SC. Multifunctional materials through modular protein engineering. *Advanced Materials*, 2012; 24:3923-3940.
67. Sengupta D, Gilbert P, Johnson K, Blau HM, Heilshorn SC. Protein-engineered biomaterials to generate human skeletal muscle mimics. *Advanced Healthcare Materials*, 2012; 1:785-789.
68. Yan KS, Chia LA, Li X, Ootani A, Su J, Lee JY, Su N, Luo Y, Heilshorn SC, Amieva MR, Sangiorgi E, Capecchi MR, Kuo C. The intestinal stem cell markers *Bmi1* and *Lgr5* identify two functionally distinct populations. *Proceedings of the National Academy of Sciences USA*, 2012; 109:466-471.
69. Raphael J, Parisi-Amon A, Heilshorn SC. Photoreactive elastin-like proteins for use as versatile bioactive materials and surface coatings. *Journal of Materials Chemistry*, 2012; 22:19429-19437.
70. Lampe KJ, Heilshorn SC. Building stem cell niches from the molecule up through engineered peptide materials. *Neuroscience Letters*, 2012; 519:138-146.
71. Aguado BA, Mulyasmita W, Su J, Lampe KJ, Heilshorn SC. Improving viability of stem cells during syringe needle flow through the design of hydrogel cell carriers. *Tissue Engineering Part A*, 2012; 18:806-815.
72. Shamloo A, Xu H, Heilshorn SC. Mechanisms of VEGF-induced path-finding by endothelial sprouts in biomaterials. *Tissue Engineering Part A*, 2012; 18:320-330.
73. Schoen AP, Schoen DT, Huggins KN, Arunigirinathan MA, Heilshorn SC. Template Engineering Through Epitope Recognition: A modular, biomimetic strategy for inorganic nanomaterial synthesis. *Journal of the American Chemical Society*, 2011; 133:18202-18207.
74. Mulyasmita W, Lee JS, Heilshorn SC. Molecular-level engineering of protein physical hydrogels for predictive sol-gel phase behavior. *Biomacromolecules*, 2011; 12:3406-3411.
75. Nevill JT, Mo A, Cord BJ, Palmer TD, Poo MM, Lee LP, Heilshorn SC. Vacuum soft lithography for one-step patterning of multiple biomolecules to direct neuronal polarization. *Soft Matter*, 2011; 7:343-347. \*This article was featured on the cover.
76. Romano N, Sengupta D, Chung C, Heilshorn S. Protein-engineered biomaterials: Nanoscale mimics of the extracellular matrix. *Biochimica et Biophysica Acta*, 2011; 1810:339-349.
77. Kuhnert F, Mancuso MR, Shamloo A, Wang HT, Choksi V, Florek M, Su H, Fruttiger M, Young WL, Heilshorn SC, Kuo CJ. Essential regulation of CNS angiogenesis by the orphan G protein-coupled receptor GPR124. *Science*, 2010; 330:985-989.
78. Schoen DT\*, Schoen AP\*, Hu L, Kim HS, Heilshorn SC, Cui Y. High speed water sterilization using one dimensional nanostructures. *Nano Letters*, 2010; 10:3628-3632.
79. Shamloo A, Heilshorn SC. Matrix density mediates polarization and lumen formation of endothelial sprouts in VEGF gradients. *Lab on a Chip*, 2010; 10:3061-3068. \*This article was featured on the cover.
80. Shelly M, Lim BK, Cancedda L, Heilshorn SC, Gao H, Poo MM. Local and long-range reciprocal regulation of cAMP and cGMP in axon/dendrite formation. *Science*, 2010; 327:547-552.

81. Sengupta D, Heilshorn SC. Protein-engineered biomaterials: Highly tunable tissue engineering scaffolds. *Tissue Engineering Part B: Reviews*, 2010; 16:285-293. \*This article was featured on the cover.
82. Straley KS, Wong Po Foo C, Heilshorn SC. Biomaterial design strategies for the treatment of spinal cord injuries. *Journal of Neurotrauma*, 2010; 27:1-19.
83. Wong Po Foo C, Lee JS, Mulyasmita W, Parisi-Amon A, Heilshorn SC. Two-component protein-engineered physical hydrogels for cell encapsulation. *Proceedings of the National Academy of Sciences USA*, 2009; 106(52):22067-22072.
84. Straley K, Heilshorn SC. Dynamic, Three-dimensional pattern formation within enzyme-responsive hydrogels. *Advanced Materials*, 2009; 21:4148-4152. \*This article was featured on the cover.
85. Wang S, Wong Po Foo C, Warriar A, Poo MM, Heilshorn SC, Zhang X. Gradient lithography of engineered proteins to fabricate 2D and 3D cell culture microenvironments. *Biomedical Microdevices*, 2009; 11(5):1127-1134.
86. Straley K, Heilshorn SC. Design and adsorption of modular engineered proteins to prepare customized, neuron-compatible coatings. *Frontiers in Neuroengineering*, 2009; 2(9):1-10.
87. Wilson RJ, Hu W, Wong Po Foo C, Koh AL, Gaster RS, Earhart CM, Fu A, Heilshorn SC, Sinclair R, Wang SX. Formation and properties of magnetic chains for 100 nm nanoparticles used in separations of molecules and cells. *Journal of Magnetism and Magnetic Materials*, 2009; 321:1452-1458.
88. Straley K, Heilshorn SC. Independent tuning of multiple biomaterial properties using protein engineering. *Soft Matter*, 2009; 5:114-124.
89. Shamloo A, Ma N, Poo MM, Sohn L, Heilshorn SC. Endothelial cell polarization and chemotaxis in a microfluidic device. *Lab on a Chip*, 2008; 8:1292-1299.
90. Shelly M, Cancedda L, Heilshorn SC, Sumbre G, Poo MM. LKB1/STRAD initiates axonal differentiation during neuronal polarization. *Cell*, 2007; 129:565-577.
91. Carrico IS, Maskarinec SA, Heilshorn SC, Mock ML, Liu JC, Nowatzki PJ, Franck C, Ravichandran G, Tirrell DA. Lithographic patterning of an intrinsically photoreactive cell-adhesive protein. *Journal of the American Chemical Society*, 2007; 129:4874-4875.
92. Heilshorn SC, Liu JC, DiZio KA, Tirrell DA. Cell-binding domain context affects cell behavior on engineered proteins. *Biomacromolecules*, 2005; 6:318-323.
93. Liu JC, Heilshorn SC, Tirrell DA. Comparative cell response to artificial extracellular matrix proteins containing the RGD and CS5 cell-binding domains. *Biomacromolecules*, 2004; 5: 497-504.
94. Heilshorn SC, DiZio KA, Welsh ER, Tirrell DA. Endothelial cell adhesion to the fibronectin CS5 domain in artificial extracellular matrix proteins. *Biomaterials*, 2003; 24:4245-4252.

## BOOK CHAPTERS

1. L. Cai, S.C. Heilshorn (2018). Designing Protein-engineered Biomaterials for Stem Cell Therapy, In N.F. Huang, N. L'Heureux, S. Li (Eds.), *Engineering Stem Cells for Tissue Regeneration*, (pp. 471-493). Singapore, World Scientific Publishing.
2. W. Mulyasmita, C. Madl, S.C. Heilshorn (2017). Protein-Engineered Biomaterials: Synthesis and Characterization, In P. Ducheyne, K. Healy, D.W. Huttmacher, D.W. Grainger, C.J. Kirkpatrick (Eds.), *Comprehensive Biomaterials II*, (pp. 18-40). Oxford, UK, Elsevier Science.
3. H. Xu, S.C. Heilshorn (2015). Engineered Microdevices to Study and Manipulate Neural Stem Cell Chemotaxis. In J.B. Leach, E.M. Powell (Eds.) *Neuromethods: Extracellular Matrix*, New York, NY, Springer Science+Business Media.
4. P. Benitez, S.C. Heilshorn (2014). Recombinant Protein Hydrogels for Cell Injection and Transplantation. In I.W. Hamley, C.J. Connon (Eds.) *Hydrogels in Cell-Based Therapies*, Cambridge, UK, Royal Society of Chemistry.

5. A.P. Parisi-Amon, S.C. Heilshorn (2013). Engineered Protein Biomaterials. In J.D. Bronzino, D.R. Peterson, (Eds.), *Biomedical Engineering Handbook*, 4th Edition, Volume 4, Boca Raton, FL, CRC Press, Taylor & Francis Group.
6. J. Raphael, A.P. Parisi-Amon, S.C. Heilshorn (2013). Protein-Engineered Hydrogels, In A. Taubert, J. Mano, J.C. Rodriguez-Cabello (Eds.), *Biomaterials Surface Science*, Mannheim, Germany, Wiley-VCH Verlag.
7. P. Benitez, S.C. Heilshorn (2013). Microfluidic Devices for Quantifying the Role of Soluble Gradients in Early Angiogenesis. In C.A. Reinhart-King (Ed.), *Mechanical and Chemical Signaling in Angiogenesis*, Vol. 12, (pp. 47-70). Heidelberg, Germany, Springer.
8. M. Greenwood-Goodwin, S.C. Heilshorn (2012). Hydrogels from Protein Engineering. In J.F. Mano (Ed.), *Biomimetic Approaches for Biomaterials Development*, (pp. 25-54). Mannheim, Germany, Wiley-VCH Verlag.
9. W. Mulyasmita, S.C. Heilshorn (2011). Protein-Engineered Biomaterials: Synthesis and Characterization, In P. Ducheyne, K. Healy, D.W. Hutmacher, D.W. Grainger, C.J. Kirkpatrick (Eds.), *Comprehensive Biomaterials*, (pp. 35-52). Oxford, UK, Elsevier Science.
10. C. Wong Po Foo, S.C. Heilshorn (2009). Protein Engineered Biomaterials, In S.J. Park, J.R. Cochran (Eds.), *Protein Engineering and Design*, (pp. 179-204). Boca Raton, FL, CRC Press, Taylor & Francis Group.

#### **PATENTS ISSUED**

1. S.C. Heilshorn, W. Mulyasmita, L. Cei. "Hetero-assembling, tunable, and injectable hydrogels for cell encapsulation," The Board of Trustees of Leland Stanford Junior University, US Patent #9,399,068. Issue Date: 7/26/2016.
2. C. Wong Po Foo, S.C. Heilshorn. "Hetero-assembled Hydrogels," The Board of Trustees of Leland Stanford Junior University, US Patent #9,011,914. Issue Date: 4/21/2015.
3. R.W. Glenn, M.R. Sine, M.D. Evans, M.E. Carethers, S.C. Heilshorn, (2000). "Liquid Personal Cleansing Compositions which Contain a Complex Coacervate for Improved Sensory Perception," The Procter & Gamble Company, US Patent #6,028,043.
4. R.W. Glenn, M.R. Sine, M.D. Evans, M.E. Carethers, S.C. Heilshorn, (1999). "Liquid Personal Cleansing Compositions which Contain an Encapsulated Lipophilic Skin Moisturizing Agent Comprised of Relatively Large Droplets," The Procter & Gamble Company, US Patent #5,932,528.
5. R.W. Glenn, M.R. Sine, M.D. Evans, M.E. Carethers, S.C. Heilshorn, (1999). "Liquid Personal Cleansing Compositions which Contain a Complex Coacervate for Improved Sensory Perception," The Procter & Gamble Company, US Patent #5,858,938.
6. R.W. Glenn, M.R. Sine, M.D. Evans, M.E. Carethers, S.C. Heilshorn, (1998). "Method for Preparing Moisturizing Liquid Personal Cleansing Compositions," The Procter & Gamble Company, US Patent #5,716,920.

#### **SELECTED MAJOR INVITED PRESENTATIONS**

1. Young Talent Award Lecture, Molecular Engineering of Polymers, China, to be September 2018.
2. Regenerative Medicine Workshop, Charleston, VA, to be March 2018.
3. Gordon Research Conference, Chemistry and Biology of Peptides, to be February 2018.
4. Materials for Tomorrow Conference, Swedish Chemical Society, Sweden, November 2017.
5. IBM Research Biotechnology Symposium, Almaden, CA, September 2017.
6. ChinaNANO, Beijing, China, August 2017.
7. International Conference on Materials Chemistry, Liverpool, UK, July 2017.
8. Gordon Research Conference, Polymers, Mount Holyoke, MA, June 2017.
9. Biomaterials International, Kenting, Taiwan, October 2016.
10. Engineering and Life, Hannover, Germany, October 2016.
11. Gordon Research Conference, Bioinspired Materials, Les Diablerets, Switzerland, June 2016.
12. International Conference on Nanoscience and Nanotechnology, Canberra, Australia, February 2016.



13. International Conference on Biomolecular Engineering, Singapore, January 2016.
14. North American Vascular Biology Organization, Hyannis, MA, October 2015.
15. International Symposium on Engineering Complex Tissues, Philadelphia, PA, April 2015.
16. King Abdullah University of Science and Technology, Saudi Arabia, February 2015.
17. 5th Alliance for Design and Application in Tissue Engineering, Sydney, Australia, August 2014.
18. 3rd Supramolecular System Symposium, Changchun, China, August 2014.
19. ASME 3<sup>rd</sup> Global Congress on NanoEngineering for Medicine, San Francisco, CA, February 2014.
20. American Association for the Advancement of Science, Chicago, IL, February 2014.
21. 4<sup>th</sup> Materials for Tomorrow Conference, Swedish Chemical Society, Sweden, October 2013.
22. 11<sup>th</sup> International Nanomedicine and Drug Delivery Symposium, La Jolla, CA, October 2013.
23. Gordon Research Conference, Biomaterials & Tissue Engineering, July 2013.
24. International Symposium on Cell-Material Integration and Biomaterials Science, Royal Society of Chemistry, Kyoto, Japan, March 2013.
25. Australian and New Zealand Orthopaedic Research Society, 18th Annual Meeting, August 2012.
26. 4<sup>th</sup> Tissue Engineering Symposium, Sydney University Tissue Engineering Network, August 2012.
27. Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices, July 2012.
28. 3<sup>rd</sup> International Conference on Strategies in Tissue Engineering, Wuerzburg, Germany, May 2012.
29. Aegean Conferences 4th International Conference on Tissue Engineering, Greece, June 2011.
30. Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices, June 2010.
31. NanoBio International Conference, Cochin, India, February 2009.

## TEACHING

- |                |                                                                                                                                                                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2016 - current | <b><i>Vice Provost Undergraduate Advisory Council</i></b> , 2-year-nomination to campus-wide council that provides guidance on undergraduate education to university leadership                                                                                        |
| 2016 - current | <b><i>Stanford Bass Council of Fellows in Undergraduate Education</i></b> , 5-year-nomination to campus-wide fellows program to reward and sustain achievement in education.                                                                                           |
| 2015           | <b><i>Stanford Faculty College</i></b> , Materials Science & Engineering Team, year-long program to improve the sequencing of classes in the undergraduate curriculum and to re-design the introductory courses for recruitment of undergraduates to the major.        |
| 2013 - current | <b><i>Stanford Postdoc Academic Chats</i></b> , Faculty mentor for question-and-answer style sessions to prepare postdoctoral trainees for academic job searches.                                                                                                      |
| 2012 - current | <b><i>Stanford Bing Overseas Studies Program</i></b> , Remote instructor for introductory materials science course for undergraduates studying in Berlin, Paris, and Florence.                                                                                         |
| 2011 - current | <b><i>Stanford Summer Engineering Academy, Materials Science Instructor</i></b><br>Designed and taught a summer class and a hands-on laboratory to introduce materials science to Stanford pre-freshmen that would diversify the engineering profession.               |
| 2009 - current | <b><i>Materials Science 81N: Bioengineering Materials to Heal the Body</i></b><br>Designed a freshmen-level elective class covering historical to current to future applications of materials in medicine. <i>Average course rating: 4.7/5.0</i>                       |
| 2008           | <b><i>Stanford School of Engineering Curriculum Renewal Grant</i></b> , Developed a series of active learning modules for an advanced graduate elective course.                                                                                                        |
| 2008 - current | <b><i>Bioengineering 361/Materials Science 381: Materials in Regenerative Medicine</i></b><br>Designed a graduate-level elective class covering modern topics in the design of biomaterials for regenerative medicine applications. <i>Ave. course rating: 4.6/5.0</i> |
| 2006 - 2016    | <b><i>Materials Science 210: Organic and Biological Materials</i></b><br>Designed a graduate-level core class covering the fundamentals of polymer science. <i>Average course rating: 4.3/5.0</i>                                                                      |
| 2006 - current | <b><i>Engineering 50M: Introduction to Materials Science - Biomaterials Emphasis</i></b><br>Designed an undergraduate-level core class that uses biomedical applications to introduce key concepts of materials science. <i>Ave. course rating: 4.4/5.0</i>            |

**MENTORSHIP****Postdoctoral Scholars**

1. Michael Kratochvil, PhD Chemistry 2016 - current  
2016 Stanford Mechanobiology Fellowship
2. Abbygail Foster, PhD Chemical Engineering 2014 - current  
2015 Stanford Cardiovascular Institute Postdoctoral Fellowship
3. Laura Marquardt, PhD Biomedical Engineering 2014 - current  
2017 Stanford Neurosciences Institute Fellowship  
2015 Stanford Geballe Laboratory for Advanced Materials Fellowship
4. Matthew Haugh, PhD Tissue Engineering 2013 - 2015  
2013 Irish Research Council ELEVATE Fellowship  
Current/Next: Postdoctoral Fellow, Royal College of Surgeons in Ireland
5. Yuki Hori, PhD Polymer Science 2013 - 2014  
Current/Next: Consultant, Deloitte Tohmatsu Consulting LLC
6. Lei Cai, PhD, PhD Polymer Engineering 2012 - 2016  
2015 NIH NRSA Postdoctoral Fellowship, 2014 Interdisciplinary Scholars Award - Stanford  
Neurosciences Institute, 2014 Best Poster Award - Gordon Research Conference on Signal  
Transduction from Engineered Extracellular Matrices, 2013 Outstanding Presentation Award -  
American Chemical Society - Division of Polymer Chemistry - Western Regional Meeting  
Current/Next: Manager of R&D, GQC Tech
7. Kelly Huggins, PhD Chemistry 2011 - 2014  
2012 Carl Storm Underrepresented Minorities GRC Travel Fellowship  
Current/Next: Project Manager, Coherus Biosciences
8. Arunagirinathan Manickam Adhimoalam 2011 - 2013  
Current/Next: Senior Scientist, Clariant
9. Kyle Lampe, PhD Chemical Engineering 2010 - 2014  
2011 NIH NRSA Postdoctoral Fellowship, 2012 SBE International Conference on  
Bioengineering and Nanotechnology Poster Award, 2012 Stanford Postdoctoral Association  
Research Award  
Current/Next: Assistant Professor, University of Virginia
10. James Su, PhD Vision Science 2010 - 2011  
Current/Next: Chief Science Officer, Lap IQ
11. Todd Ostomel, PhD Materials Science & Engineering 2009 - 2010  
Current/Next: Patent Attorney, Squire Patton Boggs
12. Hui Xu, PhD Biomedical Engineering 2009 - 2012  
2010 Stanford Cardiovascular Institute Postdoctoral Fellowship  
Current/Next: Senior Scientists, GRAIL, Inc.
13. Cindy Chung, PhD Chemical Engineering 2009 - 2013  
2010 American Heart Association Postdoctoral Fellowship  
Current/Next: Senior Scientist, Theranos
14. Cheryl Wong Po Foo, PhD Chemistry 2006 - 2009  
2008 UK-US Stem Cell Collaboration Development Award  
Current/Next: Director, Clinical & Scientific Affairs, BioCardia, Inc.

**Ph.D. Students**

1. Bauer LaSavage, PhD Biological Engineering 2016 - current  
2017 Bioengineering Fellowship
2. Alex Berry, PhD Materials Science & Engineering 2016 - current
3. Alexis Seymour, PhD Biological Engineering 2016 - current
4. Erica Castillo, PhD Mechanical Engineering (co-advised) 2015 - current
5. Nicholas Suhar, PhD Materials Science & Engineering 2015 - current

- 2016 NIH Biotechnology Fellowship
7. Dan Hunt, PhD Chemical Engineering 2014 - current
  8. Chris Lindsay, PhD Materials Science & Engineering 2014 - current  
2016 Kodak Fellowship
  9. Brad Krajina, PhD Chemical Engineering 2013 - current  
2015 BioX Fellowship
  10. Adi de la Zerda, PhD Materials Science & Engineering 2012 - 2017  
2013 National Science Foundation Fellowship, 2017 BioX Fellowship
  11. Chris Madl, PhD Bioengineering 2012 - 2017  
2017 Siebel Scholar, 2016 University of Washington Distinguished Young Scholars Seminar Series, 2015 NIH NRSA Predoctoral Fellowship, 2015 Guest scientist - Chalmers University - Gothenburg, Sweden, 2015 Lindau Nobel Laureates Meeting  
Current/Next: Postdoctoral Scholar, Stanford University School of Medicine
  12. Karen Dubbin, PhD Materials Science & Engineering 2012 - 2017  
2018 Forbes 30 under 30 in Manufacturing, 2013 BioX Bowes Fellowship  
Current/Next: Science Director, Aether, Inc.
  13. Huiyuan Wang, PhD Materials Science & Engineering 2012 - 2017  
2015 Guest scientist - Chalmers University - Gothenburg, Sweden, 2014 Kodak Fellowship, 2012 Enlight Foundation Engineering Fellowship  
Current/Next: Scientist, Applied Materials
  14. Jordan Raphel, PhD Materials Science & Engineering 2010 - 2015  
2014 Best Poster Award - Gordon Research Conference, 2013 Outstanding Presentation - Division of Polymer Chemistry - American Chemical Society  
Current/Next: Visiting Scholar, University of Notre Dame
  15. Meghaan Smith Ferreira, PhD Chemical Engineering 2010 - 2015  
2011 Society of Women Engineers Intel Fellowship, 2011 DARE Fellowship, 2012 BioX Travel Fellowship  
Current/Next: Postdoctoral Scholar, Stanford University School of Medicine
  16. Patrick Benitez, PhD Bioengineering 2009 - 2014  
2012 NIH NRSA Predoctoral Fellowship, 2012 Carl Storm Underrepresented Minorities Travel Fellowship - Gordon Research Conferences, 2011 Guest scientist, Amrita Center for Nanoscience - Cochin, India  
Current/Next: Law Student, Stanford University
  17. Midori Greenwood-Goodwin, PhD Bioengineering 2009 - 2014  
2010 NIH Biotechnology Fellowship, 2009 Department of Homeland Security ORSE Fellowship, 2009 Stanford 3D Fellowship  
Current/Next: Associate Scientist, ReCyte Therapeutics, Inc.
  18. Rebecca Snyder DiMarco, PhD Bioengineering 2009 - 2014  
2014 Siebel Scholar, 2012 BioX Travel Fellowship, 2011 NSF Fellowship  
Current/Next: Senior Associate, Exponent
  19. Nicole Romano, PhD Materials Science & Engineering 2008 - 2013  
2012 Outstanding Student Presentation at MRS National Spring Meeting, 2010 Lindau Nobel Laureates Meeting, 2008 Stanford Graduate Fellow, 2008 NSF Fellow  
Current/Next: Senior Data Scientist, Cape Analytics, Inc.
  20. Andreina Parisi-Amon, PhD Bioengineering 2008 - 2013  
2012 Stanford Centennial TA, 2012 BioX Travel Fellowship, 2012 MRS Graduate Student Silver Award, 2011 Joshua E. Neimark Memorial Travel Assistance Endowment, 2009 NSF Fellowship  
Current/Next: Manager, Teaching and Learning Team, Coursera
  21. Widya Mulyasmita, PhD Bioengineering 2008 - 2013

- 2012 Siebel Scholar, 2012 Junior Editorial Board of *Tissue Engineering*, 2012 SBE International Conference on Bioengineering and Nanotechnology Student Travel Award, 2011 Society for Biomaterials Student Travel Award, 2008 Stanford Graduate Fellowship  
 Current/Next: Manager, New Ventures, Johnson & Johnson California Innovation Center
22. Alia Schoen, PhD Materials Science & Engineering 2008 - 2013  
 2013 California Science & Technology Policy Fellowship, 2012 BioX Travel Award, 2012 ARCS Fellowship, 2012 MRS Graduate Student Gold Award, 2011 Guest scientist - FOM AMOLF - Amsterdam, Netherlands, 2010 ACS Arthur K. Doolittle Award nominee, 2009 BioX Fellowship, 2008 Larry & Joan Owen Fellowship  
 Current/Next: Public Policy Manager, Bloom Energy
23. Debanti Sengupta, PhD Chemistry 2007 - 2011  
 2011 Society for Biomaterials Student Travel Award, 2010 BioX Travel Award, 2009 Lyons Award for Leadership  
 Current/Next: Postdoctoral Scholar, Stanford University School of Medicine
24. Amir Shamloo, PhD Mechanical Engineering 2006 - 2009  
 Current/Next: Faculty member, Sharif University of Technology
25. Karin Straley Vroom, PhD Chemical Engineering 2006 - 2008  
 2008 UK-US Stem Cell Collaboration Development Award, 2007 BioX Travel Award, 2007 Best Poster Award - Biointerface Conference  
 Current/Next: Senior Scientist, Merck

### M.S. Students

1. Eric Teasley, MS Bioengineering 2012 - 2016  
 Current/Next: MD student, Stanford University School of Medicine
2. Amy Proctor, MS Chemical Engineering 2012 - 2014  
 Current/Next: Student Associate, Finnegan, Henderson, Farabow, Garrett & Dunner LLP
3. Kathryn Dwyer, MS Materials Science & Engineering 2009 - 2011  
 Current/Next: unknown
4. Ji Seok Lee, MS Materials Science & Engineering 2007 - 2011  
 Current/Next: Scientist, Hitachi
5. Mark Vodhanel, MS Materials Science & Engineering 2007 - 2009  
 Current/Next: unknown
6. Larry Wang, MS Materials Science & Engineering 2006 - 2008  
 BioX Fellowship  
 Current/Next: Launch Program Manager, Pebble Technology

### **SELECTED CAMPUS SERVICE**

- 2016 - 2017 ***Dean of Engineering Search Committee***, member
- 2016 - 2017 ***Stanford Biomedical Revolution working group***, convened by the Deans of Engineering, Medicine, Research, and Humanities & Sciences
- 2016 - current ***Sexual Harassment Advisor***, representative for the School of Engineering to the Sexual Harassment Policy Office
- 2016 - current ***Graduate admissions co-chair***, Materials Science & Engineering
- 2016 - current ***Stanford EDGE*** (Enhancing Diversity in Graduate Education), faculty mentor
- 2016 ***Stanford Neurosciences Institute Postdoctoral Fellowship Selection Committee***
- 2016 ***Faculty Search Committee - ChemH Program***, member
- 2015 Featured faculty speaker, ***Sierra Family Camp***, Stanford Alumni Association
- 2014 - current ***BioX Interdisciplinary Initiative Program***, seed grant selection committee
- 2014 - 2016 ***GLAM Postdoctoral Fellowship Selection Committee***
- 2014 ***Stanford ChEM-H Program***, Faculty Fellow
- 2014 Featured faculty speaker, ***Stanford Connects***, Stanford Alumni Association

2014	Featured faculty speaker, <i>Stanford Preview Weekend</i> for Prospective Students
2014	<i>Faculty Search Committee - Materials Science &amp; Engineering</i> , member
2013 - current	<i>Provost's Advisory Committee on Postdoctoral Affairs</i>
2013	<i>Faculty Search Committee - ChemH Program</i> , member
2012 - current	<i>Diversity and First-Gen Office</i> , faculty volunteer
2010	Featured faculty speaker, <i>Stanford Leading Matters</i> , Stanford Alumni Association
2010 - 2011	Co-director, <i>Stanford NIH Biotechnology Training Grant</i>
2010 - current	<i>Stanford DARE</i> (Diversifying Academia, Recruiting Excellence), faculty mentor
2008	<i>Faculty Search Committee - Materials Science &amp; Engineering</i> , member
2007	<i>Clayman Institute for Gender Studies</i> , Faculty Affiliate

## SELECTED EXTERNAL RESEARCH SUPPORT

### National Institutes of Health

<b>R21 HL138042</b> (PI: Heilshorn)	09/15/2017 - 09/14/2019
<i>Engineered protein hydrogels to modulate adipose-derived stromal cell secretome and exosomes for injectable myocardial infarction therapy.</i>	
<b>U01 DK085527</b> (PI: Kuo)	09/17/2017 - 08/31/2018
<i>Regulation of actively proliferating and quiescent intestinal stem cells.</i>	
<b>U19 AI116484</b> (PI: Kuo)	05/01/2015 – 4/30/2020
<i>Stanford Cooperative Research Center for Novel, Alternative Model Systems for Enteric Diseases</i>	
<b>R21 EB020235</b> (PI: Heilshorn)	04/01/2015 – 03/31/2017
<i>Injectable hydrogels to improve the efficacy of iPSC-derived therapies.</i>	
<b>R21 EB018407</b> (PI: Heilshorn)	09/30/2014 – 08/31/2016
<i>Engineered intestinal microenvironments as preclinical drug screening platforms.</i>	
<b>R21 AR062359</b> (PI: Heilshorn)	07/01/2011 – 12/30/2013
<i>3D Bioengineering Strategies to Mimic Human Skeletal Muscle Progenitor Cell Niches.</i>	
<b>T R01 DK085720</b> (PI: Kuo)	09/01/2009 – 08/31/2014
<i>Three-dimensional scaffold based systems for primary human intestinal culture.</i>	
<b>DP2 OD006477</b> (PI: Heilshorn)	10/01/2009 – 09/30/2014
<i>Engineering 3D in vitro niches to reveal fundamentals of cellular biomechanics.</i>	

### U.S. Department of Energy

<b>FWP SCW0079</b> (PI: Heilshorn)	06/01/2008 – 09/30/2016
<i>Protein biotemplates for the self-assembly of 2D and 3D nanostructures.</i>	

### National Science Foundation

<b>DMR - 1508006</b> (PI: Heilshorn)	06/01/2015 – 05/31/2018
<i>Design of self-assembling bio-inks for cell-based 3D printing.</i>	
<b>DMR - 0846363</b> (PI: Heilshorn)	09/01/2009 – 08/30/2014
<i>CAREER: Adaptable biomaterials that enable cell-induced remodeling and drug delivery.</i>	
<b>EFRI - CBE - 0709786</b> (PI: Pruitt)	08/01/2007 - 07/31/2011
<i>Engineering of cardiovascular cellular interfaces and tissue constructs.</i>	

### California Institute for Regenerative Medicine

<b>RT3 - 07948</b> (PI: Heilshorn)	05/01/2015 – 04/30/2018
<i>Injectable hydrogels for the delivery, maturation, and engraftment of clinically relevant numbers of human induced pluripotent stem cell-derived neural progenitors to the central nervous system.</i>	
<b>RT2 - 01938</b> (PI: Heilshorn)	06/01/2011 – 05/31/2014
<i>Preparation and Delivery of Clinically Relevant Numbers of Stem Cells Using 3D Hydrogels.</i>	