

Curriculum Vitae

ZHEN GU, PH.D.

Professor

Department of Bioengineering

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POSITIONS AND EMPLOYMENT

- Professor** 2018-
Department of Bioengineering
University of California, Los Angeles (UCLA)
- Founding Director** 2016-2018
Biomedical Engineering Translational Innovation (BME-Train) Practice Master of Science Program
University of North Carolina at Chapel Hill | North Carolina State University
- Associate Professor** 2016-2018
Joint Department of Biomedical Engineering, Pharmacoengineering Program
University of North Carolina at Chapel Hill | North Carolina State University
(*Joint Position*) Division of Molecular Pharmaceutics and Center for Nanotechnology in Drug Delivery
Eshelman School of Pharmacy
(*Joint Position*) Department of Medicine, Division of Endocrinology and Metabolism
University of North Carolina at Chapel Hill
- Assistant Professor** 2012-2016
Joint Department of Biomedical Engineering, Pharmacoengineering Program
University of North Carolina at Chapel Hill | North Carolina State University
(*Joint Position*) Division of Molecular Pharmaceutics and Center for Nanotechnology in Drug Delivery
Eshelman School of Pharmacy
(*Joint Position*) Department of Medicine, Division of Endocrinology and Metabolism
University of North Carolina at Chapel Hill

EDUCATION AND TRAINING

- Massachusetts Institute of Technology (MIT) | Harvard Medical School (HMS)** Cambridge, MA
Postdoctoral Fellow, Advisor: Robert S. Langer 2010-2012
Koch Institute for Integrative Cancer Research, Department of Chemical Engineering, MIT
Children's Hospital Boston, HMS
- University of California, Los Angeles (UCLA)** Los Angeles, CA
Ph.D., Chemical /Biomolecular Engineering, Nanobiotechnology, Advisor: Yi Tang 2006-2010
Department of Chemical and Biomolecular Engineering | Department of Mechanical and Aerospace Engineering
School of Engineering and Applied Science (2010/12/10)
- Nanjing University (NJU)** Nanjing, China
M.S., Polymer Chemistry and Physics, Advisor: Qundong Shen 2003-2006
Department of Polymer Science and Engineering, School of Chemistry and Chemical Engineering (2006/07/01)
- Nanjing University (NJU)** Nanjing, China
B.S., Chemistry, Advisors: Qundong Shen | Changzheng Yang 1999-2003
Department of Chemistry, School of Chemistry and Chemical Engineering (2003/07/01)

HONORS AND AWARDS

- *Biomaterials Science* Lectureship Award, 2018
- Young Investigator Award, Controlled Release Society (CRS), 2017
- Research Achievement Award, ALCOA Foundation, 2017
- Jackson Family Endowed Chair Professorship, 2017
- Annual Health Care Hero, Triangle Business Journal, 2017
- Runner-up of APEC Science Prize for Innovation, Research, and Education (ASPIRE) Competition, U.S. Dept. State, 2017
- National Academy of Engineering (NAE) Frontiers in Engineering Invitee, 2016
- Sloan Research Fellow, Alfred P. Sloan Foundation, 2016

- GOOD 100- "100 Global Creative Individuals", *GOOD Magazine*, 2016
- University Faculty Scholar Award, NC State, 2016
- NC TraCS 4D (Drugs, Devices and Diagnostics Development) Research Award, 2016
- TR35-Global Top Innovator under 35 (Pioneer in Biomedicine and Materials), MIT Technology Review, 2015
- Top 10 Science Images in *Science Magazine*, 2015
- ACCLAIM Fellow, Program of Academic Career Leadership Academy in Medicine at UNC, 2015
- Young Innovator Award of Cellular and Molecular Bioengineering (CMBE), Biomedical Engineering Society (BMES), 2015
- The First Prize of Surgery-Engineering Speed Dating Award, UNC, 2015
- "Young Talents in Polymer Science" Highlight, *Macromolecular Chemistry and Physics*, 2015
- Pathway Award, American Diabetes Association, 2015
- Young Faculty Research Award, Sigma Xi Chapter of the Scientific Research Society, 2014
- Junior Faculty Award, American Diabetes Association, 2014
- NC State Research Innovative Award, 2013, 2015
- NC TraCS \$50K Translational Science Pilot Award, UNC, 2013, 2015
- NC State Faculty Research and Professional Development Award, 2013
- Specially-Appointed Full Professor in Jiangsu Province-Nanjing University, China, 2012 (relinquished)
- Excellent Publication Award of Key Laboratory of Mesoscopic Chemistry, China, 2011
- Chinese Government Award for Outstanding Ph.D. Students Abroad, Los Angeles, 2010
- Fellowship of "Functional Engineered Nano Architectonics" (FENA), UCLA, 2008
- Distinguished Graduate Student, NJU, 2006
- Finalist for DSM Business Course-"2006-ZHUO", Shanghai, 2006
- Scholarship of National Distinguished Graduate Student, China, 2005
- Dai An-Bang Scholarship for Excellent Experimental Abilities, China, 2003
- Distinguished Youth Leadership Award in Jiangsu Province, China, 2003
- Distinguished Model Student of NJU, 2002
- GuangHua Scholarship for Outstanding Undergraduate Students, China, 2002
- The First Prize of People's Scholarship for Distinguished Students in NJU, 2002
- The First Prize of People's Scholarship for Distinguished Students in NJU, 2001
- The First Prize of 6th Academic Paper Competition in NJU, 2001
- The First Prize of 10th Youth Creativity Competition in Jiangsu Province, China, 1999

PUBLICATIONS

• JOURNAL PAPERS

(*: corresponding author; †: equal contribution)

1. Shuangjiang Yu, Chao Wang, Jicheng Yu, Jinqiang Wang, Yue Lu, Yuqi Zhang, Xudong Zhang, Quanyin Hu, Wujin Sun, Chaoliang He*, Xuesi Chen*, Zhen Gu*, "Injectable Bioresponsive Gel Depot for Enhanced Immune Checkpoint Blockade", *Advanced Materials*, 1801527, 2018.
2. Chao Wang+, Jinqiang Wang+, Xudong Zhang, Shuangjiang Yu, Di Wen, Quanyin Hu, Yanqi Ye, Hunter Bomba, Xiuli Hu, Zhuang Liu, Gianpietro Dotti, Zhen Gu*, "In Situ Formed Reactive Oxygen Species-Responsive Scaffold with Gemcitabine and Checkpoint Inhibitor for Combination Therapy", *Science Translational Medicine*, 10(eaan3682), 2018.
3. Zhen Gu*, Xiaoyuan Chen*, "Drug Delivery Towards Skin", *Advanced Drug Delivery Reviews*, in press, 2018.
4. Zhaowei Chen, Jinqiang Wang, Wujin Sun, Edikan Archibong, Anna R. Kahkoska, Xudong Zhang, Yue Lu, Frances S. Ligler, John B. Buse, Zhen Gu*, "Synthetic β -cells for Fusion-Mediated Dynamic Insulin Secretion", *Nature Chemical Biology*, 14(86), 2018.
5. Jinqiang Wang, Yanqi Ye, Jicheng Yu, Anna R. Kahkoska, Xudong Zhang, Chao Wang, Wujin Sun, Ria D. Corder, Zhaowei Chen, Saad A. Khan, John B. Buse, Zhen Gu*, "Core-Shell Microneedle Gel for Self-Regulated Insulin Delivery", *ACS Nano*, 12(2466), 2018.
6. Quanyin Hu, Qian Chen, Zhen Gu*, "Advances in transformable drug delivery systems", *Biomaterials*, in press, 2018

7. Junnan Tang, Teng Su, Ke Huang, Phuong-Uyen Dinh, Zegen Wang, Adam Vandergriff, Michael T. Hensley, Jhon Cores, Tyler Allen, Taosheng Li, Erin Sproul, Emily Mihalko, Leonard J. Lobo, Laura Ruterbories, Alex Lynch, Ashely Brown, Thomas George Caranasos, Deliang Shen, George Andrew Stouffer, Zhen Gu, Jinying Zhang, Ke Cheng*, "Targeted Repair of Heart Injury by Stem Cells Fused with Platelet Nanovesicles", **Nature Biomedical Engineering**, 2(17), 2018.
8. Xudong Zhang, Chao Wang, Jinqiang Wang, Quanyin Hu, Benjamin Langworthy, Yanqi Ye, Wujin Sun, Jing Lin, Tianfu Wang, Jason Fine, Hao Cheng, Gianpietro Dotti, Peng Huang*, Zhen Gu*, "PD-1 Blockade Cellular Vesicles for Cancer Immunotherapy", **Advanced Materials**, 30(1707112), 2018.
9. Guojun Chen, Jicheng Yu, Zhen Gu*, "Glucose-Responsive Microneedle Patches for Diabetes Treatment", **Journal of Diabetes Science and Technology**, in press, 2018
10. Meng Liu, Shiyang Shen, Di Wen, Mengru Li, Teng Li, Xiaojie Chen, Zhen Gu*, Ran Mo*, "Hierarchical Nanoassemblies-Assisted Combinational Delivery of Cytotoxic Protein and Antibiotic for Cancer Treatment", **Nano Letters**, 18 (2294), 2018
11. Wenfei Chen, Ying Wang, Ming Qin, Xudong Zhang, Zhirong Zhang, Xun Sun*, Zhen Gu, "Bacteria-Driven Hypoxia Targeting for Combined Biotherapy and Photothermal Therapy", **ACS Nano**, in press, 2018
12. Yuqi Zhang, Peijian Feng, Jicheng Yu, Jia Yang, Jiacheng Zhao, Jinqiang Wang*, Qundong Shen*, Zhen Gu*, "ROS-Responsive Microneedle Patch for Acne Vulgaris Treatment", **Advanced Therapeutics**, 1800035, 2018.
13. Zhaowei Chen+, Quanyin Hu+, Zhen Gu*, "Leveraging Engineering of Cells for Drug Delivery", **Accounts of Chemical Research**, 51(668), 2018.
14. Jicheng Yu, Yuqi Zhang, Zhen Gu*, "Advances in Bioresponsive Closed-loop Drug Delivery Systems", **International Journal of Pharmaceutics**, 544(350), 2018.
15. Junjie Yan, Yue Lu, Min Yang*, Zhen Gu*, "Advances in Liquid Metals for Biomedical Applications", **Chemical Society Reviews**, 47(2518), 2018.
16. Yanqi Ye, Jicheng Yu, Di Wen, Anna R. Kahkoska, Zhen Gu*, "Polymeric Microneedles for Transdermal Protein Delivery", **Advanced Drug Delivery Reviews**, in press, 2018.
17. Guang Yang*, Yuqi Zhang, Zhen Gu*, "Punching and Electroporation for Enhanced Transdermal Drug Delivery", **Theranostics**, in press, 2018.
18. Yingli Luo, Congfei Xu, Hongjun Li, Zhiting Cao, Jing Liu, Jilong Wang, Xiaojiao Du, Xianzhu Yang*, Zhen Gu, Jun Wang*, "Macrophage-Specific in Vivo Gene Editing Using Cationic Lipid-Assisted Polymeric Nanoparticles", **ACS Nano**, 12(994), 2018.
19. Yuqi Zhang, Jinqiang Wang*, Anna R. Kahkoska, John B. Buse, Zhen Gu*, "Bioresponsive Microneedles with a Sheath Structure for H₂O₂ and pH Cascade-Triggered Insulin Delivery", **Small**, 14(1704181), 2018.
20. Yuqi Zhang, Jicheng Yu, Di Wen, Guojun Chen, Zhen Gu*, "The Potential of a Microneedle Patch for Reducing Obesity", **Expert Opinion on Drug Delivery**, 15(431), 2018
21. Yuqi Zhang, Jicheng Yu, Li Qiang*, Zhen Gu*, "Nanomedicine for Obesity Treatment", **Science China Life Sciences**, 64(373), 2018.

22. Lulu Cai, Zhipeng Gu, Jian Zhong, Di Wen, Guojun Chen, Lin He, Jun Wu*, Zhen Gu*, "Advances in Glycosylation-Mediated Cancer-Targeted Drug Delivery", ***Drug Discovery Today***, 23(1126), 2018.
23. Shuangjiang Yu, Dianliang Zhang, Chaoliang He*, Wujin Sun, Rangjuan Cao, Shusen Cui, Mingxiao Deng, Zhen Gu*, Xuesi Chen*, "Injectable Thermo-Sensitive Polypeptide-based CDDP-Complexed Hydrogel for Improving Localized Antitumor Efficacy", ***Biomacromolecules***, 18(4341), 2017.
24. Naveed Bakh, Mabel Cortinas, Michael Weiss, Robert Langer, Daniel Anderson, Zhen Gu, Sanjoy Dutta, Michael Strano*, "Glucose-Responsive Insulin by Molecular and physical Design", ***Nature Chemistry***, 9(937), 2017.
25. Junjie Yan, Jicheng Yu, Chao Wang, Zhen Gu*, "Red Blood Cells for Drug Delivery", ***Small Methods***, 1700270, 2017.
26. Jinqiang Wang, Yuqi Zhang, Edikan Archibong, Frances S. Ligler*, Zhen Gu*, "Leveraging H₂O₂ Levels for Biomedical Applications", ***Advanced Biosystems***, 1(1700084), 2017.
27. Chao Wang, Di Wen, Zhen Gu*, "Cellular Bioparticulates with Therapeutics for Cancer Immunotherapy", ***Bioconjugate Chemistry***, 29(702), 2017.
28. Yanqi Ye, Chao Wang, Xudong Zhang, Quanyin Hu, Yuqi Zhang, Qi Liu, Di Wen, Joshua Milligan, Adriano Bellotti, Leaf Huang, Gianpietro Dotti, Zhen Gu*, "A Melanin-Mediated Cancer Immunotherapy Patch", ***Science Immunology***, 2(eaan5692), 2017.
29. Guang Yang, Yue Lu, Hunter N. Bomba, Zhen Gu*, "Cysteine-rich Proteins for Drug Delivery and Diagnosis", ***Current Medicinal Chemistry***, 24, 2017.
30. Yuqi Zhang, Qiongmeng Liu, Jicheng Yu, Shuangjiang Yu, Jinqiang Wang, Li Qiang, Zhen Gu*, "Locally-Induced Adipose Tissue Browning by Microneedle Patch for Obesity Treatment", ***ACS Nano***, 11(9223), 2017.
31. Yue Lu, Zhen Gu*, "Kidney: a Size "Bandpass" Filter", ***Nature Nanotechnology***, 12(2013), 2017. (Invited News & Views)
32. Chunfang Gu, Hoai-Nghia Nguyen, Douglas Ganini, Zhaowei Chen, Henning J Jessen, Zhen Gu, Huanchen Wang, Stephen B Shears, "Knockout of 5-InsP7 Kinase Activity Transforms the HCT116 Colon Cancer Cell line into a Hypermetabolic, Growth-Inhibited Phenotype", ***Proceedings of the National Academy of Sciences U.S.A. (PNAS)***, 114(11968), 2017.
33. Wujin Sun, Wenyan Ji, Quanyin Hu, Zhen Gu*, "Leveraging Physiology for Precision Drug Delivery", ***Physiological Reviews***, 97(189), 2017.
34. Yuqi Zhang, Jicheng Yu, Hunter Bomba, Yong Zhu, Zhen Gu*, "Mechanical Force-Triggered Drug Delivery", ***Chemical Reviews***, 116(19), 2016.
35. Jicheng Yu, Yuqi Zhang, Anna R. Kahkoska, Zhen Gu*, "Bioresponsive Transcutaneous Patches", ***Current Opinion in Biotechnology***, 48(28), 2017
36. Chao Wang, Yanqi Ye, Wujin Sun, Jicheng Yu, Jinqiang Wang, David Lawrence, John Buse, Zhen Gu*, "Red Blood Cells for Glucose-Responsive Insulin Delivery", ***Advanced Materials***, 29(1606617), 2017.
37. Yuqi Zhang, Jicheng Yu, Jinqiang Wang, Nicholas J. Hanne, Zheng Cui, Chenggen Qian, Chao Wang, Hongliang Xin, Jacqueline H. Cole, Caterina M. Gallippi*, Yong Zhu*, Zhen Gu*, "Thrombin-Responsive Transcutaneous Patch for Auto-Anticoagulant Regulation", ***Advanced Materials***, 29(1604043), 2017. (Cover Feature)
38. Chao Wang, Wujin Sun, Yanqi Ye, Hunter Bomba, Zhen Gu*, "In situ Activation of Platelets with Checkpoint Inhibitors for Post-Surgical Cancer Immunotherapy", ***Nature Biomedical Engineering***, 1(0017), 2017.

39. Quanyin Hu, Wujin Sun, Chenggen Qian, Hunter N. Bomba, Hongliang Xin, Zhen Gu*, "Relay Drug Delivery for Amplifying Targeting Signal and Enhancing Anticancer Efficacy", **Advanced Materials**, 29(1605803), 2017.
40. Yanqi Ye, Jinqiang Wang, Quanyin Hu, Gabrielle M. Hochu, Hongliang Xin, Chao Wang*, Zhen Gu*, "Synergistically Transcutaneous Immunotherapy Enhances Antitumor Immune Responses through Blockade of PD1 and IDO", **ACS Nano**, 10(8956), 2016.
41. Chao Wang, Yanqi Ye, Quanyin Hu, Adriano Bellotti, Zhen Gu*, "Tailoring Biomaterials for Cancer Immunotherapy: Emerging Trends and Future Outlook", **Advanced Materials**, 29(1606036), 2017.
42. Yue Lu, Yiliang Lin, Zhaowei Chen, Yang Liu, Shuangjiang Yu, Wei Gao, Michael D. Dickey, Zhen Gu*, "Enhanced Endosomal Escape by Light-fueled Liquid-metal Transformer", **Nano Letters**, 17(2138), 2017.
43. Xiuli Hu, Yuqi Zhang, Zhigang Xie, Xiabin Jing, Adriano Bellotti, Zhen Gu*, "Stimuli-Responsive Polymersomes for Biomedical Applications", **Biomacromolecules**, 18(649), 2017. **(Invited Perspective)**
44. Jin Di, Jicheng Yu, Qun Wang, Shanshan Yao, Dingjie Suo, Yanqi Ye, Matthew Pless, Yong Zhu, Yun Jing, Zhen Gu*, "Ultrasound-Triggered Noninvasive Regulation of Blood Glucose Levels Using Microgels Integrated with Insulin Nanocapsules", **Nano Research**, 10(1393), 2017.
45. Chenggen Qian, Jicheng Yu, Yulei Chen, Quanyin Hu, Xuanzhong Xiao, Wujin Sun, Chao Wang, Qun-Dong Shen, Zhen Gu*, "Light-Activated Hypoxia-Responsive Nanocarriers for Enhanced Anticancer Therapy", **Advanced Materials**, 28(3313), 2016. **(Cover Feature)**
46. Yanqi Ye, Jicheng Yu, Chao Wang, Nhu-Y Nguyen, John B. Buse, Zhen Gu*, "Microneedles Integrated with Pancreatic Cells and Synthetic Glucose-Signal Amplifiers for Smart Insulin Delivery", **Advanced Materials**, 28(3115), 2016. **(Cover Feature)**
47. Jicheng Yu, Chenggen Qian, Yuqi Zhang, Zhen Cui, Yong Zhu, Qun-Dong Shen, Frances Ligler, John Buse, Zhen Gu*, "Hypoxia and H₂O₂ Dual-Sensitive Vesicles for Enhanced Glucose-Responsive Insulin Delivery", **Nano Letters**, 17(733), 2017.
48. Chenggen Qian, Peijian Feng, Jicheng Yu, Yulei Chen, Qundong Shen*, Zhen Gu*, "Anaerobe-Inspired Anticancer Nanovesicles", *submitted to **Angewandte Chemie International Edition***, 56(2588), 2017. **(VIP Paper; Cover Feature)**
49. Xiuli Hu, Jicheng Yu, Chenggen Qian, Yue Lu, Anna R. Kahkoska, Zhigang Xie, Xiabin Jing, John B. Buse, Zhen Gu*, "H₂O₂-Responsive Vesicles Integrated with Transcutaneous Patches for Glucose-Mediated Insulin Delivery", **ACS Nano**, 11(613), 2017.
50. Ping'an Ma, Haihua Xiao, Chang Yu, Jianhua Liu, Ziyong Cheng, Haiqin Song, Xinyang Zhang, Chunxia Li, Jinqiang Wang, Zhen Gu*, Jun Lin*, "Enhanced Cisplatin Chemotherapy by Iron Oxide Nanocarriers-Mediated Generation of Highly Toxic Reactive Oxygen Species", **Nano Letters**, 17(928), 2017.
51. Chao Wang, Wujin Sun, Yanqi Ye, Hunter N. Bomba, Zhen Gu*, "Bioengineering of Artificial Antigen Presenting Cells and Lymphoid Organs", **Theranostics**, 7(3504), 2017.
52. Yuqi Zhang, Jicheng Yu, Anna Kahkoska, Zhen Gu*, "Photoacoustic Drug Delivery", **Sensors**, 17(1400), 2017.
53. Jicheng Yu, Yuqi Zhang, Wujin Sun, Anna R. Kahkoska, Jinqiang Wang, John B. Buse, Zhen Gu*, "Insulin-Responsive Glucagon Delivery for Prevention of Hypoglycemia", **Small**, 13(1603028), 2017. **(Cover Feature)**
54. Chenggen Qian, Yulei Chen, Peijian Feng, Xuanzhong Xiao, Mei Dong, Jicheng Yu, Quanyin Hu, Qundong Shen, Zhen Gu* "Conjugated Polymer Nanomaterials for Theranostics", **Acta Pharmacologica Sinica**, 38(764), 2017.

55. Yue Lu, Alex Aimetti, Robert Langer*, Zhen Gu*, "Bioresponsive Materials", **Nature Reviews Materials**, 1(16075), 2016.
56. Chao Wang, Yanqi Ye, Gabrielle M. Hochu, Zhen Gu*, "Enhanced Cancer Immunotherapy by Microneedle Patch-Assisted Delivery of Anti-PD1 Antibody", **Nano Letters**, 16(2334), 2016.
57. Quanyin Hu, Chenggen Qian, Wujin Sun, Jinqiang Wang, Zhaowei Chen, Hunter N. Bomba, Hongliang Xin, Qundong Shen, Zhen Gu*, "Engineered Nano-platelets for Enhanced Treatment of Multiple Myeloma and Thrombus", **Advanced Materials**, 28(9573), 2016.
58. Quanyin Hu, Wujin Sun, Hunter Bomba, Zhen Gu*, "Tumor Microenvironment-Mediated Construction and Deconstruction of Depots for Enhanced Anticancer Efficacy", **Nano Letters**, 16(1118), 2016.
59. Chao Wang, Wujin Sun, Yanqi Ye, Grace Wright, Andrew Wang, Zhen Gu*, "Transformable DNA Nanocarriers for Membrane Targeted Delivery of Cytokines", **Advanced Materials**, 28(8912), 2016.
60. Dongquan Shi, Xingquan Xu, Yanqi Ye, Kai Song, Yixiang Cheng, Jin Di, Quanyin Hu, Jianxin Li, Huangxian Ju, Qing Jiang*, Zhen Gu*, "Photo-Crosslinked Scaffold with Kartogenin-Encapsulated Nanoparticles for Cartilage Regeneration", **ACS Nano**, 10(1292), 2016.
61. Zhen Gu*, "Introduction to Special Issue- Responsive Materials and Systems: Toward Smart and Precision Medications ", **Bioengineering and Translational Medicine**, 1(235), 2016. (Editorial)
62. Quanyin Hu, Zhen Gu*, "Engineering Platelet-Mimicking Drug Delivery Vehicles", **Frontiers of Chemical Sciences and Engineering**, 1, 2016.
63. Jicheng Yu, Xiuli Hu, Zhen Gu*, "Stimuli-Responsive Delivery of Therapeutics for Diabetes Treatment", **Bioengineering and Translational Medicine**, 1(323), 2016.
64. Wujin Sun, Zhen Gu*, "Tailoring Non-Viral Delivery Vehicles for Transporting Genome-Editing Tools", **Science China Materials**, 60(511), 2016. (Invited Review)
65. Lingyan Lv, Xin Liu, Baoyan Wang, Yan Jian, Wei Lv , Yue Zhao, Huihui Shi, Quanyin Hu, Hongliang Xin, Qunwei Xu*, Zhen Gu, "Enhanced Antiglioblastoma Efficacy of Neovasculature and Glioma Cells Dual Targeted Nanoparticles", **Molecular Pharmaceutics**, 13(3506), 2016.
66. Xudong Zhang, Xin Liang, Jianjun Gu, Danfeng Chang, Jinjie Zhang, Zhaowei Chen, Yanqi Ye, Chao Wang, Wei Tao, Xiaowei Zeng, Gan Liu, Yongjun Zhang*, Lin Mei*, Zhen Gu*, "Investigation and Intervention of Autophagy to Guide Cancer Treatment with Nanogels", **Nanoscale**, 9(150), 2016.
67. Chao Wang*, Yanqi Ye, Zhen Gu*, "Local Delivery of Checkpoints Antibodies", **Human Vaccines & Immunotherapeutics**, 13(245), 2016
68. Chenggen Qian, Yulei Chen, Sha Zhu, Jicheng Yu, Lei Zhang, Peijian Feng, Xin Tang, Xuanzhong Xiao, Qun-Dong Shen, Zhen Gu*, "ATP-Responsive and Near-Infrared-Emissive Nanocarriers for Anticancer Drug Delivery and Real-Time Imaging ", **Theranostics**, 6(1053), 2016.
69. Jicheng Yu, Yuqi Zhang, Xiuli Hu, Wujin Sun, Chao Wang, Yanqi Ye, Zhen Gu*, "Internalized Compartments-Encapsulated Nanogel for Targeted Drug Delivery", **Nanoscale**, 8(9178), 2016.
70. Wujin Sun, Wenyan Ji, Quanyin Hu, Jicheng Yu, Chao Wang, Chenggen Qian, Gabrielle Hochu, Zhen Gu*, "Transformable Nanocarriers for Membrane Targeted Delivery of Cytokines", **Biomaterials**, 96(1), 2016.
71. Yue Zhao, Yan Jiang, Wei Lv, Zhongyuan Wang, Lingyan Lv, Baoyan Wang, Xin Liu, Yang Liu, Quanyin Hu, Wujin Sun, Qunwei Xu, Hongliang Xin*, Zhen Gu, "Dual Targeted Nanocarrier for Brain Ischemic Stroke Treatment", **Journal of Controlled Release**, 233(64), 2016.

72. Wujin Sun, Zhen Gu*, "ATP-Responsive Drug Delivery Systems", *Expert Opinion on Drug Delivery*, 13(311), 2016. (Invited Article)
73. Yuqi Zhang, Yong Zhu*, Zhen Gu*, "Elastic Drug Delivery: could treatments be triggered by patient movement?" *Nanomedicine*, 11(323), 2016.
74. Jicheng Yu, Zhen Gu*, "Hypoxia-Sensitive Materials for Biomedical Applications", *Annals of Biomedical Engineering*. 44(1931), 2016. (Invited Article for special issue on "Biomaterials")
75. Jicheng Yu, Yuqi Zhang, Yanqi Ye, Rocco DiSanto, Wujin Sun, Davis Ranson, Frances Ligler, John Buse, Zhen Gu*, "Microneedle-Array Patches Loaded with Hypoxia-Sensitive Vesicles Provide Fast Glucose-Responsive Insulin Delivery", *Proceedings of the National Academy of Sciences U.S.A. (PNAS)*, 112(8260), 2015.
76. Yue Lu, Quanyin Hu, Yiliang Lin, Dennis B. Pacardo, Chao Wang, Wujin Sun, Frances S. Ligler, Michael D. Dickey, Zhen Gu*, "Transformable Liquid-Metal Nanomedicine", *Nature Communications*, 6(10066), 2015.
77. Samir Mitragotri*, Daniel G. Anderson, Shawn X. Chen, Edward K. Chow, Dean Ho, Alexander V. Kabanov, Jeffrey M. Karp, Kazunori Kataoka, Chad A. Mirkin, Sarah Hurst. Petrosko, Jinjun Shi, Molly M. Stevens, Shouheng Sun, Sweehin Teoh, Subbu S. Venkatraman, Younan Xia, Shutao Wang, Zhen Gu*, Chenjie Xu*, "Accelerating the Translation of Nanomaterials in Biomedicine", *ACS Nano*, 9(6644), 2015.
78. Quanyin Hu, Chengqen Qian, Yanqi Ye, Chao Wang, Zhen Gu*, "Anticancer Platelet-Mimicking Nanovehicles", submitted to *Advanced Materials*, 27(7043), 2015. (Selected as a VIP Paper; Cover Feature)
79. Wujin Sun, Wenyan Ji, Jordan M. Hall, Quanyin Hu, Chao Wang, Chase L. Beisel, Zhen Gu*, "Efficient Delivery of CRISPR-Cas9 for Genome Editing via Self-Assembled DNA Nanoclews", *Angewandte Chemie International Edition*, 127(12197), 2015. (Selected as a Hot Paper; Cover Feature)
80. Jin Di, Shanshan Yao, Yanqi Ye, Zheng Cui, Jicheng Yu, Tushar K. Ghosh, Young Zhu*, Zhen Gu*, "Stretch-Triggered Drug Delivery from Wearable Elastomer Films Containing Therapeutic Depots", *ACS Nano*, 9(9407), 2015.
81. Ran Mo, Zhen Gu*, "Tumor microenvironment and intracellular signal-activated nanomaterials for anticancer drug delivery", *Materials Today*, 19(274), 2015.
82. Quanyin Hu, Wujin Sun, Zhen Gu*, "Recent advances of cocktail chemotherapy by combination drug delivery systems", *Advanced Drug Delivery Reviews*, 98(19), 2015. (Invited Article)
83. Wujin Sun, Tianyue Jiang, Yue Lu, Margaret Reiff, Ran Mo, Zhen Gu*, "Cocoon-Like Self-Degradable DNA-Nanoclew for Anticancer Drug Delivery", *Journal of the American Chemical Society*, 136(14722), 2014.
84. Muxun Zhao, Yarong Liu, Renee Hsieh, Nova Wang, Kye-Il Joo, Pin Wang, Zhen Gu, Yi Tang*, "Clickable Protein Nanocapsules for Targeted Delivery of Recombinant p53 Protein" *Journal of the American Chemical Society*, 136(15319), 2014.
85. Ran Mo, Tianyue Jiang, Zhen Gu*, "Enhanced Anticancer Efficacy by ATP-Mediated Liposomal Drug Delivery", *Angewandte Chemie International Edition*, 53(5810), 2014.
86. Wujin Sun, Yue Lu, Zhen Gu*, "Rolling Circle Amplification (RCA) for Engineering Drug Delivery Carriers" *Therapeutic Delivery*, 6(765), 2015.
87. Tianyue Jiang, Wujin Sun, Nancy A. Burns, Saad A. Khan, Ran Mo, Zhen Gu*, "Furin-Mediated Sequential Delivery of Anticancer Cytokine and Small-Molecule Drug Shuttled by Graphene", *Advanced Materials*, 27(1021), 2015. (Cover Feature)

88. Jin Di, Jinwook Kim, Quanyin Hu, Xiaoning Jiang*, Zhen Gu*, "Spatiotemporal Drug Delivery Using Laser-Generated-Focused Ultrasound System", **Journal of Controlled Release**, 220(592), 2015.
89. Xiaohui Li, Jicheng Yu, Naiyan Lu, Weidong Zhang, Zhijun Hu, Yuqiang Ma, Yuyan Weng*, Zhen Gu*, "Confinement-induced Nanocrystals Alignment under the Soft-Stamped Nanoimprint Lithography", **Chinese Physics B**, 24(104215), 2015.
90. Jin Di*, Jicheng Yu*, Yanqi Ye, Davis Ranson, Abby Jindal, Zhen Gu*, "Engineering Synthetic Insulin-Secreting Cells Using Hyaluronic Acid Microgels Integrated with Glucose-Responsive Nanoparticles" **Cellular and Molecular Bioengineering**, 8(445), 2015. (Cover Feature; Young Innovators Special Issue).
91. Yanqi Ye, Jicheng Yu, Zhen Gu*, "In Situ Preparation of Stimuli-Responsive Protein Nanogels", **Macromolecular Chemistry and Physics**, 217(333), 2015. (Invited Article; "Young Talents in Polymer Science" Specific Issue)
92. Dennis B. Pacardo, Bhanu Neupane, S. Michaela Rikard, Yue Lu, Ran Mo, Sumeet R. Mishra, Joseph B. Tracy, Gufeng Wang, Frances S. Ligler* and Zhen Gu*, "A dual wavelength-activatable gold nanorod complex for synergistic cancer treatment", **Nanoscale**, 7(12096), 2015.
93. Wenyan Ji, Wujin Sun, Jinmei Feng, Tianshun Song, Dalu Zhang, Pingkai Ouyang, Zhen Gu, Jingjing Xie*, "Characterization of a Novel N-Acetylneuraminic Acid Lyase Favoring N-Acetylneuraminic Acid Aynthesis", **Scientific Reports**, 5(9341), 2015.
94. Bingxi Yan, Boyi Li, Forest Kunecke, Zhen Gu, Liang Guo*, "Polypyrrole-Based Implantable Electroactive Pump for Controlled Drug Microinjection", **ACS Applied Materials & Interfaces**, 7(14563), 2015.
95. Dennis Pacardo, Frances Ligler*, Zhen Gu*, "Programmable Nanomedicine: Synergistic and Sequential Drug Delivery Systems", **Nanoscale**, 7(3381), 2015.
96. Wujin Sun, Zhen Gu*, "Engineering DNA-Scaffolds for Delivery of Anticancer Therapeutics", **Biomaterials Science**, 3(1018), 2015. (Invited Article for "Polymeric Biomaterials in Cancer Nanotechnology Special Issue")
97. Ran Mo, Tianyue Jiang, Wujin Sun, Zhen Gu*, "ATP-Responsive DNA/Graphene Nanoaggregates for Enhanced Control Drug Delivery", **Biomaterials**, 50(67), 2015.
98. Ran Mo, Tianyue Jiang, Rocco DiSanto, Wanyi Tai, Zhen Gu*, "ATP-Triggered Anticancer Drug Delivery", **Nature Communications**, 5(3364), 2014.
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100. Yue Lu, Ran Mo, Wanyi Tai, Wujin Sun, Dennis Pacardo, Frances Ligler, Zhen Gu*, "Self-Folded Redox/pH Dual-Responsive Nanocarriers for Anticancer Drug Delivery", **Chemical Communications**, 50(15105), 2014.
101. Yuqi Zhang, Jicheng Yu, Qundong Shen, Zhen Gu*, "Glucose-Responsive Synthetic Closed-Loop Insulin Delivery Systems", **Progress in Chemistry**, 1(11), 2015.
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103. Yue Lu, Wujin Sun, Zhen Gu*, "Stimuli-Responsive Nanomaterials for Therapeutic Protein Delivery", **Journal of Controlled Release**, 194(1), 2014.
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110. Yizhou Dong, Ahmed A. Eltokhy, Christopher A. Alabi, Omar F. Khan, Omid Veisheh, J. Robert Dorkin, Sasilada Sirirungruang, Hao Yin, Benjamin C. Tang, Jeisa M. Pelet, Delai Chen, Zhen Gu, Yuan Xue, Robert Langer, Daniel G. Anderson*, “Lipid-Like Nanomaterials for Simultaneous Gene Expression and Silencing *In Vivo*”, **Advanced Healthcare Materials**, 3(1392), 2014.
111. Tianyue Jiang†, Ran Mo†, Adriano Bellotti, Jianping Zhou, Zhen Gu*, “Gel-Liposome-Mediated Co-Delivery of Anticancer Membrane-Associated Proteins and Small-Molecule Drugs for Enhanced Therapeutic Efficacy” **Advanced Functional Materials**, 24(2295), 2014. (**Cover Feature**)
112. Jin Di, Jennifer Price, Xiao Gu, Xiaoning Jiang, Yun Jing, Zhen Gu*, “Ultrasound-Triggered Regulation of Blood Glucose Levels Using Injectable Nano-Network”, **Advanced Healthcare Materials**, 3(811), 2014. (**Cover Feature**)
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114. Ying Chen, Jingya Nan, Yue Lu, Chunpeng Wang, Fuxiang Chu, Zhen Gu*, “Hybrid Fe₃O₄-Poly (Acrylic Acid) Nanogels for Theranostic Cancer Treatment”, **Journal of Biomedical Nanotechnology**, 11(5), 2014.
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133. Lei Zhang*, Zhen Gu, Zhiping Yu, Xiangqing He, Yong Chen. "A CMOS Microarray with On-chip Decoder/Amplifier and Its Integration with Bio-Nano-System" **Journal of Semiconductors**, 29(10) (1947), 2008.
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• BOOK CHAPTERS

1. Zhen Gu*, Yi Tang, Yong Chen. "Fabrication of Biomolecular Nanopatterns" Chapter in: F. Columbus "Advances in Nanotechnology". NOVA Scientific Publisher. 2010.
2. Yuyan Weng, Yue Lu, Zhen Gu* "Hydrogels for Drug Delivery" Chapter in: J. Chan, C. Xu "Perspectives in Micro and Nanotechnology for Biomedical Applications". Imperial College Press, UK, 2014.
3. Wanyi Tai, Zhen Gu* "Enzyme Nanocapsules for Glucose Sensing and Insulin Delivery" Chapter in: P. Grunwald "Biocatalysis and Nanotechnology". PanStanford Publishing, Singapore, 2014.
4. Wujin Sun, Zhen Gu* "RCA-generated self-degradable DNA nanoclews for pH-responsive delivery of anticancer drugs" Chapter in: V. Demidov "Rolling Circle Amplification". Springer, 2016.
5. Dennis B. Pacardo, Frances Ligler*, Zhen Gu* "Dual-Wavelength-Triggered Gold Nanorods for Anticancer Treatment" Chapter in: S. H. Petrosko et al. "Biomedical Nanotechnology: Methods and Protocols". Springer Press, 2016.
6. Yuqi Zhang, Jicheng Yu, Zhen Gu* "Hypoxia-Sensitive Vesicles for Glucose-Responsive Insulin Delivery" Chapter in: S. H. Petrosko et al. "Biomedical Nanotechnology: Methods and Protocols". Springer Press, 2016.

• **FILED/ISSUED PATENT APPLICATIONS (15 are licensed to companies)**

1. Zhen Gu, Jicheng Yu, "Glucose Sensitive Hyaluronic Acid Compositions for Drug Delivery", ***U.S. Provisional Patent Application No. 62/514,099***, filed 06/02/2017.
2. Zhen Gu, Jicheng Yu, "Insulin-Responsive Glucagon Delivery Patch", ***U.S. Provisional Patent Application No. 62/467,996***, filed 03/07/2017.
3. Zhen Gu, Yuqi Zhang, Jicheng Yu, "Thrombin-Responsive Hydrogels and Devices for Auto-Anticoagulant Regulation", ***U.S. Provisional Patent Application No. 62/453,162***, filed 02/01/2017.
4. Zhen Gu, Jinqiang Wang, "Microneedle Gel for Self-Regulated Insulin Delivery", ***U.S. Provisional Patent Application No. 62/430,260***, filed 12/05/2016.
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6. Zhen Gu, Chao Wang, "Platelet Compositions and Methods for the Delivery of Therapeutic Agents", ***U.S. Provisional Patent Application No. 62/393,839***, filed 09/13/2016.
7. Zhen Gu, Chao Wang, "Inflammation-Triggered Delivery of CpG Oligodeoxynucleotides and an Immunotherapeutic Agent", ***U.S. Provisional Patent Application No. 62/308,513***, filed 03/15/2016.
8. Zhen Gu, Chao Wang, Yanqi Ye, "Enhanced Cancer Immunotherapy by Microneedle Patch-Assisted Delivery", ***U.S. Provisional Patent Application No. PCT/US2017/020135***, filed 03/01/2016.
9. Zhen Gu, Wujin Sun, "Nucleic Acid Nanocages, Compositions, and Uses Thereof", ***U.S. Provisional Patent Application No. 62/203,123***, filed 08/10/2015.
10. Zhen Gu, Yanqi Ye, "Methods and Compositions Related to Physiologically Responsive Microneedle Delivery", ***U.S. Provisional Patent Application No. 62/297,346***, filed 02/19/2016.
11. Zhen Gu, Chao Wang, "Glucose Responsive Insulin Delivery Compositions and Methods", ***U.S. Provisional Patent Application No. 62/278,614***, filed 01/14/2016.
12. Zhen Gu, Yue Lu, "Biocompatible Particles and Methods of Making and Use Thereof", ***U.S. Provisional Patent Application No. 62/258,287***, filed 11/20/2015.

13. Zhen Gu, Quanyin Hu, "Platelet Membrane-Coated Drug Delivery System", **U.S. Provisional Patent Application No. 62/204,084**, filed 08/12/2015.
14. Zhen Gu, Wujin Sun, "Nucleic Acid Nanocages, Compositions, and Uses Thereof", **U.S. Provisional Patent Application No. 62/203,123**, filed 08/10/2015.
15. Zhen Gu, Wujin Sun, "Efficient Delivery of CRISPR-Cas9 for Genome Editing via Self-Assembled DNA Nanoclews", **U.S. Provisional Patent Application No. 62/150,622**, filed 8/2015. 2015.
16. Zhen Gu, Quanyin Hu, "Anticancer Platelet-Mimicking Nanomedicine", **U.S. Provisional Patent Application No. 62/150,622**, filed 8/2015, 2015.
17. Zhen Gu, Jicheng Yu, "Glucose-Responsive Insulin Delivery System Using Hypoxia Sensitive Nanocomposites", **U.S. Provisional Patent Application No. 62/150,622**, filed 4/21/2015.
18. Zhen Gu, Wanyi Tai, "Folding Graft Copolymer with Pendant Drug Segment for Co-Delivery of Anticancer Drugs", **U.S. Provisional Patent Application No. 62/000,450291**, filed 05/21/2014.
19. Zhen Gu, Ran Mo, Tianyue Jiang, "Methods and Constructs for Compound Delivery", **U.S. Provisional Patent Application No. 61/893,450**, filed 10/21/2013.
20. Robert Langer, Zhen Gu, Daniel Anderson, "Glucose-responsive microgels for closed loop insulin delivery", **International Patent Publication No. WO2013123492 A2**, 2013.
21. Robert Langer, Daniel Anderson, Zhen Gu, Alex Aimetti, "Self-regulated peptide hydrogel for insulin delivery", **International Patent Publication No. WO2013123492 A2**, 2013.
22. Daniel Anderson, Zhen Gu, Alex Aimetti, Robert Langer, "Injectable Nano-Network Gels for Diabetes Treatment" **International Patent Publication No. WO/2014/179344**, 2014.
23. Yi Tang, Zhen Gu, Yunfeng Lu, Ming Yan, Anuradha Biswas, Guoping Fan. "Protease-Assisted Native-Protein Delivery Approach" **U.S. Patent Application Serial No. 13/089,117**, filed 04/18/2011.
24. Yi Tang, Zhen Gu, Muxun Zhao. "Redox Responsive Nanocapsules for Protein Delivery" **U.S. Application Serial No. 61/476,094**, filed 04/15/2011.
25. Qun-Dong Shen, Bin Sun, Yang Zhang, Zhen Gu. "Preparation and Application of a Magnetic/Fluorescent Hybrid Nanocomposite Material" **China Patent No. 200810020415**, filed 08/06/2008.

INVITED TALKS AND NAMED LECTURES

1. Zhen Gu "Platelet for Drug Delivery", **Gordon Research Conference (GRC) on the Cell Biology of Megakaryocytes and Platelets**, Feb. 24, 2019, Galveston, TX, USA.
2. Zhen Gu "Platelet for Drug Delivery", **Gordon Research Symposium (GRS) on the Cell Biology of Megakaryocytes and Platelets**, Feb. 22, 2019, Galveston, TX, USA.
3. Zhen Gu "Synthetic Pancreatic Beta Cells", **Gordon Research Conference (GRC) on Biointerface Science**, Jun. 17, 2018, Lucca, Italy.
4. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **The 34th Annual Meeting of the Canadian Biomaterials Society**, May. 18, 2018, Victoria, Canada. (**Keynote Speaker**)
5. Zhen Gu "Glucose-Responsive Insulin Delivery", **International Diabetes and Immunology Conference, Xiangya Hospital**, Apr. 21, 2018, Changsha, China.

6. Zhen Gu “Glucose-Responsive Insulin Delivery”, **IPITA 2018 Opinion Leaders Meeting on Stem Cell Derived Beta Cells**, May. 7, 2018, Boston, MA, USA.
7. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **International Advanced Drug Delivery Symposium, National Tsing Hua University**, Apr. 12, 2018, Hsinchu, Taiwan.
8. Zhen Gu “Smart Drug Delivery”, **sPark Program, NC State**, Apr. 7, 2018, Raleigh, NC, USA.
9. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Charles F. Erhart Lecture, Pfizer**, Apr. 6, 2018, Sanford, NC, USA.
10. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Earle A. Chiles Research Institute**, Mar. 16, 2018, Portland, OR, USA.
11. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Department of Pharmacy, University of Georgia**, Feb. 26, 2018, Atlanta, GA, USA.
12. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Department of Chemistry, Central Michigan University**, Jan. 29, 2018, Mount Pleasant, MI, USA.
13. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Department of Bioengineering, University of California, Los Angeles**, Jan. 18, 2018, Los Angeles, CA, USA.
14. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **School of Medicine, Wayne State University**, Dec. 6, 2017, Detroit, MI, USA.
15. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Department of Chemistry, University of Georgia**, Nov. 8, 2017, Atlanta, GA, USA.
16. Zhen Gu “Smart Insulin Delivery”, **the 17th Annual Diabetes Technology Meeting (DTM)**, Nov. 4, 2017, D.C., USA.
17. Zhen Gu “Bioresponsive Patches”, **Beijing Symposium in Biomaterials 2017**, Oct. 31, 2017, Soochow, China.
18. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **China Controlled Release Society Annual Meeting**, Oct. 29, 2017, Shanghai, China. **(Keynote Speaker)**
19. Zhen Gu “Bioresponsive Drug Delivery”, **China Biomaterials Society Annual Meeting**, Oct. 28, 2017, Nanchang, China. **(Keynote Speaker)**
20. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **International Symposium on Stimuli-Responsive Materials (ISSRM)**, Oct. 24, 2017, Santa Rosa, CA, USA.
21. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Pharmacoengineering Seminar, University of North Carolina**, Sep. 22, 2017, Raleigh, NC, USA.
22. Zhen Gu “Leverage Physiology for Bioresponsive Drug Delivery”, **Division of Hematology/Oncology, University of North Carolina at Chapel Hill**, Sep. 21, 2017, Chapel Hill, NC, USA.
23. Zhen Gu “Smart Insulin Delivery”, **10th International Meeting of Pediatric Endocrinology**, Sep. 16, 2017, D.C., USA.
24. Zhen Gu “Small and Smart Bioresponsive Patches”, **Wiley Small Science Symposium 2017**, Aug. 30, 2017, Beijing, China.

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25. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **ChinaNANO 2017**, Aug. 29, 2017, Beijing, China.
26. Zhen Gu "Local/Targeted Delivery of Immune Checkpoint Inhibitors", **Workshop on Advances in Nanomedicine, National Cancer Institute (NCI)**, Aug. 26, 2017, D.C., USA.
27. Zhen Gu "Photoacoustic Drug Delivery", **17th IEEE International Conference on Nanotechnology**, Jul. 27, 2017, Pittsburgh, PA, USA.
28. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **JHU Center for Nanomedicine, Johns Hopkins University**, Jul. 26, 2017, Baltimore, MD, USA.
29. Zhen Gu "Liquid-Metal Nanomedicine", **The 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'17)**, Jul. 13, 2017, Jeju Island, Korea.
30. Zhen Gu "Bioresponsive Drug Delivery", **Workshop on Advanced Materials, Nanyang Technological University**, Jun. 23, 2017, Singapore.
31. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **9th International Conference on Materials for Advanced Technologies (ICMAT)**, Jun. 19, 2017, Singapore.
32. Zhen Gu "Smart Drug Delivery", **APEC Science Prize for Innovation, Research, and Education (ASPIRE) Competition Award Ceremony, U.S. Department of State**, Jun. 12, 2017, D.C., USA.
33. Zhen Gu "Smart Insulin Delivery", **77th ADA Annual Meeting**, Jun. 10, 2017, San Diego, CA, USA.
34. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **Department of Nanoengineering, UCSD**, Jun. 8, 2017, San Diego, CA, USA.
35. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **School of Pharmacy, Fudan University**, June 1, 2017, Shanghai, China.
36. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **Shanghai Institute of Organic Chemistry, CAS**, May 31, 2017, Changchun, China.
37. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **Changchun Institute of Applied Chemistry, CAS**, May 28, 2017, Changchun, China.
38. Zhen Gu "Leverage Physiology for Smart Drug Delivery", **Luye Pharma. Inc.**, May 25, 2017, Yantai, China.
39. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **School of Medicine, Shenzhen University**, May 17, 2017, Shenzhen, China.
40. Zhen Gu "Bioresponsive Drug Delivery", **School of Medicine, Shenzhen University, Hepalink**, May 16, 2017, Shenzhen, China.
41. Zhen Gu "Bioresponsive Drug Delivery", **The 10th Congress of Chinese Association of Orthopaedic Surgeons**, May. 12, 2017, Guangzhou, China.
42. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **National Center for Nanoscience and Nanotechnology**, May. 11, 2017, Beijing, China.
43. Zhen Gu "Leverage Physiology for Bioresponsive Drug Delivery", **Department of Chemistry, Pecking University**, May. 9, 2017, Beijing, China.
44. "Smart Insulin Delivery-an Update", **Sanofi**, April. 13, 2017, Frankfurt, Germany.

45. "Local Delivery of Immune Checkpoint Inhibitors", **2017 ACS Spring Meeting**, Apr. 2-6, 2017, San Francisco, CA, USA.
46. "Leverage Physiology for Smart Drug Delivery", **Department of Chemistry, University of Texas at Dallas**, Mar. 31, 2017, Dallas, TX, USA.
47. "Leverage Physiology for Smart Drug Delivery", **IBM**, Mar. 10, 2017, Syracuse, NY, USA.
48. "Leverage Physiology for Smart Drug Delivery", **Department of Textile Engineering, NC State University**, Feb. 15, 2017, Raleigh, NC, USA.
49. "Bio-Responsive Smart Drug Delivery", **Department of Biomedical Engineering, Duke University**, Feb. 9, 2017, Durham, NC, USA.
50. "Leverage Physiology for Bio-Responsive Drug Delivery", **JDRF Mission Summit Conference**, Jan. 25-27, 2017, San Francisco, CA, USA.
51. "Leverage Physiology for Bio-Responsive Drug Delivery", **2nd International Symposium on Translational Nanomedicine**, Jan. 4-7, 2017, Guangzhou, China.
52. "Leverage Physiology for Precision Medications", **University of Hong Kong**, Jan. 4, 2017, Hong Kong, China.
53. "Leverage Physiology for Precision Medications", **Hong Kong City University**, Jan. 3, 2017, Hong Kong, China.
54. "Bio-Responsive Drug Delivery", **School of Medicine, Shanghai Jiaotong University**, Dec. 29, 2016, Shanghai, China.
55. "Bio-Responsive Drug Delivery", **School of Medicine, Shanghai Tongji University**, Dec. 28, 2016, Shanghai, China.
56. "Bio-Responsive Drug Delivery", **Nanjing Tech University**, Dec. 26, 2016, Nanjing, China
57. "Bio-Responsive Drug Delivery", **Duke University**, Nov. 18, 2016, Durham, NC, USA.
58. "Leverage Physiology for Precision Medications", **University of Connecticut**, Nov. 11, 2016, Storrs, CT, USA.
59. "Bio-Responsive Drug Delivery", **Toxicology Program Seminar, NC State University**, Nov. 8, 2016, Raleigh, NC, USA
60. "Leverage Physiology for Precision Medications", **2nd China Nanomedicine International Conference**, Oct. 17-19, 2016, Wuhan, China.
61. "Bioresponsive Microneedle Patches", **6th International Nanobio Conference and 1st Symposium on Minimally Invasive and Image Guided Surgery**, Oct. 17-18, 2016, Nanjing, China.
62. "Leverage Physiology for Precision Drug Delivery", **Leading Edge Technologies on Crystallization Engineering and Clinical Therapeutic Development International Conference**, Oct. 15-16, 2016, Tianjin, China. (Plenary Speaker)
63. "Bioresponsive Drug Delivery", **Nankai University**, Oct. 14, 2016, Tianjin, China.
64. "Stretch-Triggered Drug Delivery", **Surgery Grand Rounds at UNC Chapel Hill**, Sep. 24, 2016, Chapel Hill, NC, USA.
65. "Bio-Responsive Microneedles", **43rd Controlled Release Society Annual Meeting**, Jul. 16-18, 2016, Seattle, WA, USA.
66. "Leverage Physiology for Precision Medications", **Sun Yat-Sen University**, Jul. 14, 2016, Guangzhou, China.
67. "Leverage Physiology for Precision Drug Delivery", **1st symposium of the Chinese American Society of Nanomedicine and Nanobiotechnology (CASNN)**, Jul. 10-12, 2016, Beijing, China. (Keynote Speaker)

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68. "Leverage Physiology for Precision Medications", **National Center for Nanoscience and Nanotechnology**, Jul. 7, 2016, Beijing, China.
69. "Leverage Physiology for Precision Medications", **Tsinghua University**, Jul. 7, 2016, Beijing, China.
70. "Leverage Physiology for Precision Medications", **Beijing University of Chemical Technology**, Jul. 6, 2016, Beijing, China.
71. "Leverage Physiology for Precision Medications", **School of Chemistry and Chemical Engineering, Peking University**, Jul. 6, 2016, Beijing, China.
72. "Leverage Physiology for Precision Medications", **School of Pharmacy, Peking University**, Jul. 5, 2016, Beijing, China.
73. "Leverage Physiology for Precision Medications", **Longjin Pharmaceutical Company**, Jul. 1, 2016, Kunming, China.
74. "Leverage Physiology for Precision Medications", **School of Chemistry and Chemical Engineering, Nanjing University**, Jun. 29, 2016, Nanjing, China.
75. "Leverage Physiology for Precision Medications", **University of Science and Technology of China**, Jun. 28, 2016, Hefei, China.
76. "Leverage Physiology for Precision Medications", **China Pharmaceutical University**, Jun. 21, 2016, Nanjing, China.
77. "Smart Insulin Delivery", **Jiangsu Province People's Hospital**, Jun. 19, 2016, Nanjing, China.
78. "Leverage Physiology for Precision Medications", **Functional Nano & Soft Materials Laboratory, Soochow University**, Jun. 24, 2016, Suzhou, China.
79. "Leverage Physiology for Precision Drug Delivery", **4th Biomaterials and Biomedical Devices Innovation Conference**, Jun. 23, 2016, Suzhou, China. **(Keynote Speaker)**
80. "Smart Nano-Carriers for Drug Delivery", **11th Sino-US symposium on Nanoscale Science and Technology**, Jun. 17-19, 2016, Nanjing, China.
81. "Leveraging Physiology for Precision Drug Delivery", **2016 ACS Spring Meeting**, Mar. 13-17, 2016, San Diego, CA, USA.
82. "Leveraging Physiology for Precision Drug Delivery", **2016 Nano-Formulation Workshop**, Mar. 14-16, 2016, Chapel Hill, NC, USA.
83. "Leveraging Physiology for Precision Drug Delivery", **ASME 5th NanoEngineering for Medicine and Biology Conference**, Feb. 21-24, 2016, Houston, TX, USA. **(Keynote Speaker)**
84. "Small Insulin Delivery: Opportunities and Challenges", **1st Therapeutic Peptides Symposium**, Feb. 4, 2016, Paris, France.
85. "Smart Insulin Delivery", **EmTech, MIT Technology Review Symposium**, Nov. 2, 2016, Boston, MA, USA.
86. "Small & Smart Drug Delivery", **Surgery Grand Rounds at UNC Chapel Hill**, Jul. 22, 2015, Chapel Hill, NC, USA.
87. "Leveraging Physiology for Precise Drug Delivery", **Sigma Aldrich Webinar**, Jun. 22, 2015.
88. "Leveraging Physiology for Precise Drug Delivery", **17th International Drug Delivery Symposium**, Jun. 15, 2015, Salt Lake City, USA.

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89. "Smart Insulin Delivery- Inspired by Nature", **75th ADA Annual Meeting**, Jun. 4, 2015, Boston, USA.
90. "Smart Insulin Delivery", **Eli Lilly**, Jun. 2, 2015, Indianapolis, USA.
91. "Programmed Drug Delivery", **"Nanotechnology Workshop" at Duke University**, Apr. 17, 2015, Durham, USA.
92. "Programmed Drug Delivery", **Chemistry Department at University of North Carolina at Charlotte**, Apr. 16, 2015, Charlotte, USA.
93. "Leveraging Physiology for Precise Drug Delivery" **2015 ACS Spring Meeting**, Mar. 22-26, 2015, Denver, CO, USA.
94. "Small but Smart Delivery", **Seminar of MRS Student Chapter at NC State**, Oct. 27, 2014, Raleigh, USA.
95. "Small but Smart Delivery", **American-Chinese Biotechnology Forum at North Carolina**, Oct. 26, 2014, Research Triangle Park, USA.
96. "Smart Insulin Delivery", **Sanofi**, Sep. 4, 2014, Frankfurt, Germany.
97. "Physiological Signals-Triggered Controlled Drug Delivery", **School of Pharmacy, Huazhong University of Science and Technology**, Jul. 10, 2014, Wuhan, China.
98. "Physiological Signals-Triggered Controlled Drug Delivery", **School of Pharmacy, Nanjing Medical University**, Jul. 8, 2014, Nanjing, China.
99. "Physiological Signals-Triggered Controlled Drug Delivery", **School of Advanced Materials, Nanjing Tech University**, Jul. 8, 2014, Nanjing, China.
100. "Physiological Signals-Triggered Controlled Drug Delivery", **School of Chemistry and Chemical Engineering, Nanjing University**, Jul. 7, 2014, Nanjing, China.
101. "Physiological Signals-Triggered Controlled Drug Delivery", **Technical Institute of Physics and Chemistry, CAS**, Jul. 4, 2014, Beijing, China. "Young Scientists Forum"
102. "Physiological Signals-Triggered Controlled Drug Delivery", **National Center for Nanoscience and Nanotechnology**, Jul. 2, 2014, Beijing, China. "Young Scientists Forum in Nanotechnology"
103. "Physiological Signals-Triggered Controlled Drug Delivery", **Department of Pharmacy, Tsinghua University**, Jul. 3, 2014, Beijing, China.
104. "Physiological Signals-Triggered Controlled Drug Delivery", **Molecular Pharmaceutics Division, UNC-CH**, Mar. 7, 2014, Chapel Hill, NC, USA.
105. "Physiological Signals-Triggered Controlled Drug Delivery", **Chemistry Department, UCLA**, Feb. 28, 2014, Los Angeles, CA, USA.
106. "Small But Smart Drug Delivery", **RTP 180°**, Feb. 20, 2014, Research Triangle Park, NC, USA.
107. "Smart Insulin Delivery", **Carolina Science Cafe series, NC Science Festival**, Dec. 4, 2013, Chapel Hill, NC, USA.
108. "Smart Protein Gels", **Department of Pharmaceutical Science at Campbell University**, Nov. 20, 2013, Buies Creek, NC, USA.
109. "Smart Insulin Gels", **the 13th Annual Diabetes Technology Meeting (DTM)**, Nov. 1, 2013, San Francisco, CA, USA.

110. "Smart Protein Gels", **Seminar for Department of Chemical and Biomolecular Engineering, North Carolina State University**, Sep. 10, 2013, Raleigh, NC, USA.
111. "Smart Insulin Gels", **Special Seminar for Department of Endocrinology, University of North Carolina at Chapel Hill**, Jun. 27, 2013, Chapel Hill, NC, USA.
112. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **Special Seminar for Graduate Students in Soochow University**, Jun. 4, 2013, Soochow, Jiangsu, China.
113. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **Special Seminar in Subei People's Hospital and Yangzhou University**, May. 30, 2013, Yangzhou, Jiangsu, China.
114. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **College of Bioscience and Biomedical Engineering, Southeast University**, May. 29, 2013, Nanjing, Jiangsu, China.
115. "Proteins Gels for Therapeutics and Diagnostics", **School of Biomedical Engineering, Nanyang Technological University**, May. 24, 2013, Singapore.
116. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **the Pharmaceutical Expert Lecture Series in China Pharmaceutical University**, May. 22, 2013, Nanjing, Jiangsu, China.
117. "Proteins Gels for Therapeutics and Diagnostics", **Special Seminar in College of Chemistry and Chemical Engineering, Nanjing University of Technology**, May. 20, 2013, Nanjing, Jiangsu, China.
118. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **Langer Lab Seminar Series in Massachusetts Institute of Technology**, Apr. 11, 2012, Cambridge, MA, USA.
119. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **the Lindbergh Lecture Series in University of Wisconsin-Madison**, Mar. 22, 2012, Madison, WI, USA.
120. "Positioning Proteins into Gels for Therapeutics and Diagnostics", **Special Seminar for the Joint Biomedical Engineering Department at University of North Carolina at Chapel Hill and North Carolina State University**, Mar. 12, 2012, Chapel Hill-Raleigh, NC, USA.
121. "Hydrogel Based Protein Patterning, Encapsulation and Delivery" **Special Seminar for Graduate Students in Nanjing University**, Sep. 16, 2011, Nanjing, Jiangsu, China.
122. "At the Interface of Bio and Nano", **2010 Nagoya University and UCLA Collaboration Conference**, Mar. 4-5, 2010, Los Angeles, CA, USA.

TEACHING EXPERIENCE

- **2015-2017 Spring, Instructor, UNC-CH/NC State**
Lecture: Advanced Drug Delivery Systems (BME590)
- **2013-2017 Fall, Instructor, UNC-CH/NC State**
Lecture and lab course: Biomedical Engineering Measurements (BME204)
- **2007 Spring, Teaching Assistant, UCLA**
Lecture course: Nanoscience and Biotechnology
- **2007 Winter, 2008 Winter, Teaching Assistant, UCLA**
Lab course: Nanoscale Fabrication, Characterization, and Biodetection Lab
- **2004 Spring, Teaching Assistant, Nanjing University**
Lecture course: Introduction to Polymer Science and Engineering

PROFESSIONAL ACTIVITIES

- **Academic Affiliations**
Member of American Diabetes Association, 2013-Present

Member of American Society for Engineering Education (ASEE), 2012-Present
 Member of Biomedical Engineering Society (BMES), 2011-Present
 Member of Materials Research Society (MRS), 2008-Present
 Member of American Association of Pharmaceutical Scientists (AAPS), 2012-2013
 Member of Controlled Release Society (CRS), 2011-Present
 Member of American Chemical Society (ACS), 2007-2008

• **Focus Group Chair**

Bioinspired and Biomimetic Drug Delivery (BBDD), Controlled Release Society (CRS), 2018-Present

• **Editorships**

Associate Editor

Nano Research, 2017-Present

Guest Editor

Advanced Drug Delivery Reviews, Bioengineering and Translational Medicine, Advanced Healthcare Materials, Journal of Diabetes Technology

Editorial Board

Scientific Reports

Advanced Biosystems

Nanotheranostics

Progress of Chemistry

Chinese Biomedical Instruments

• **Judge**

TR35, *MIT Technology Reviews*, 2018-Present

• **Grants Reviewer**

Panelist

National Institutes of Health (NIH), USA

National Science Foundation (NSF), USA

Juvenile Diabetes Research Foundation (JDRF/Innovation Grants), USA

SMART Innovation Center, Singapore

Agency for Science, Research & Technology (A*STAR), Singapore

• **Symposium Organizers/Chairs**

Symposium Organizer/Co-Organizer

“Biomaterials for Immunotherapy”, 277th ACS Annual Spring Meeting, San Francisco, 2017

“Nanomedicines: Targeting and Clearance”, 274th ACS Annual Spring Meeting, San Diego, 2016

“Nanomaterials in Translational Medicine”, MRS Annual Spring Meeting, San Francisco, 2015

Session Chair/Co-Chair

“Advances in Pharmacoengineering: Biologically Inspired Designs”, Annual Chapel Hill Pharmaceutical Sciences Conference, Chapel Hill, 2014

“Biomaterials for Cardiovascular Engineering”, Annual Meeting of Society for Biomaterials, Denver, 2014

“Materials for Nanomedicine”, Annual World Congress of NanoMedicine, Suzhou, China, 2013

“Biomolecular Engineering Session”, BMES Annual Meeting, Atlanta, 2012

• **Journal Paper Reviewer**

ACS Applied Materials & Interfaces

ACS Nano

Acta Biomaterialia

Advanced Materials

Advanced Functional Materials

Advanced Healthcare Materials

Advanced Powder Technology

Analytical Chemistry
Analytical Methods
Angewandte Chemie International Edition
Biomacromolecules
Biomaterials
Biomaterials Science
Chemical Communications
Chemical Society Reviews
Chemistry of Materials
Chemistry Science
Colloids and Surfaces B: Biointerfaces
Current Cancer Drug Targets
Green Chemistry
Journal of Applied Polymer Science
Journal of Biomedical Technology and Research
Journal of Controlled Release
Journal of Laboratory Automation
Journal of the American Chemical Society
Journal of Materials Chemistry
Journal of Nanomaterials
Journal of Nanoscience and Nanotechnology
Lab on a Chip
Macromolecules
Macromolecular Chemistry and Physics
Materials Letters
Materials Science and Engineering B
Microelectronic Engineering
Molecular Pharmaceutics
Molecular Therapy
Molecule BioSystems
Nanomedicine
Nanoscale
Nano Research
Nature Biomedical Engineering
Nature Chemical Biology
Nature Chemistry
Nature Communications
Nature Materials
Nature Nanotechnology
Nature Reviews Materials
PLOS One
PNAS
Polymer
Polymer Bulletin
Polymer Chemistry
Progress in Chemistry
Regenerative Materials
RSC Advances
Science
Science Advances
Science Translational Medicine
Scientific Reports
Small
Soft Matter
Technology
Theranostics
WIREs Nanomedicine & Nanobiotechnology