

# Guizhi “Julian” Zhu, PhD

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### Education

08/2013	Ph.D., Medical Sciences - Physiology & Pharmacology, University of Florida (UF), Gainesville, FL (Advisor: Dr. Weihong Tan)
06/2008	B.S., Biotechnology, Nankai University, Tianjin, China

### Employment and Affiliations

2023 –	Ara Garo Paul (Endowed) Associate Professor, Department of Pharmaceutical Science, College of Pharmacy, University of Michigan, Ann Arbor, MI
2023 –	Member, BioInnovations in Brain Cancer, Biointerfaces Institute, University of Michigan, Ann Arbor, MI
2023 –	Core Member, Developmental Therapeutics Program, Rogel Cancer Center, University of Michigan, Ann Arbor, MI
2023 –	Member (courtesy), Center for RNA Biomedicine, University of Michigan, Ann Arbor, MI
2021 –	Co-founder and CSO, AmpedRNA Biosciences LLC (up to 20% effort)
2020 – 2023	Member, The Center On Health Disparities
2019 – 2023	Member, Center for Pharmaceutical Engineering and Sciences, VCU
2019 – 2023	Member, Institute for Structural Biology, Drug Discovery and Development, VCU
2018 – 2023	Assistant Professor, Department of Pharmaceutics, School of Pharmacy, VCU, Richmond, VA
2018 – 2023	Associate Member, Developmental Therapeutics, VCU Massey Cancer Center, Richmond, VA
2014 – 2018	Postdoc, NIH/NIBIB, Bethesda, MD (Advisor: Dr. Xiaoyuan Shawn Chen)
2013 – 2014	Postdoc, Department of Chemistry and Shands Cancer Center, UF (Advisor: Dr. Weihong Tan)
2009 – 2013	Research Assistant, College of Medicine, UF (Advisor: Dr. Weihong Tan)

### Primary Areas of Interest

- Discover and engineer nucleic acid vaccines, immunotherapeutics, gene editors, and probes;
  - ◆ circular RNA (circRNA) therapeutics, vaccines, and gene editors
  - ◆ Smart mRNA and circRNA therapeutics
  - ◆ Immunomodulatory DNA/RNA therapeutics and vaccine adjuvants



Total cost: \$1,940,625

- DoD CDMRP BCRP Breakthrough Award - Funding Level 2 BC210931P1 Zhu (Partnering PI)  
08/2022 – 07/2025  
*Small circular mRNA vaccine for the immunotherapy of breast cancer dormancy*  
Total cost: \$1,112,535
- Research Scholar Grant RSG-22-055-01-IBCD, American Cancer Society Zhu (PI) 1/2023 –  
12/2026  
*Novel and potent cGAS-STING-activating vaccines for combination immunotherapy of melanoma*  
Total cost: \$759,000

### **Completed Research Support**

- NIH/NIGMS R35GM143014-01S1 Zhu (PI) 07/2022  
*Instrument supplement for NIH/NIGMS project R35GM143014*  
Total cost: \$175,170
- NIH/NINDS R21NS114455 (NCE) Zhu (PI), Valerie (MPI) 08/2020 – 06/2023  
*Radioimmunotherapy for glioblastoma*  
Total cost: \$426,938
- VCU Commercialization Fund Zhu (PI) 7/2022 – 6/2023  
*Nucleic acid-based cGAS agonists as novel and potent immunostimulants for cancer immunotherapy*  
Total cost: \$50,000
- VCU Commercialization Fund Zhu (PI) 12/2021 – 11/2022  
*Small circular mRNA: a novel platform of mRNA vaccines*  
Total cost: \$50,000
- METAvivor Young Investigator Award Zhu (PI) 01/2021 – 12/2022  
*Medico-AlbiVax for the combination immunotherapy of metastatic breast cancer*  
Total cost: \$100,000
- Molecule to Medicine grant, Massey Cancer Center Zhu (PI), Wang (MPI) 06/2021 - 05/2022  
*Small circular mRNA as a novel platform of vaccine for melanoma immunotherapy*  
Total cost: \$100,000
- NIH/NCATS KL2 scholarship KL2TR002648 Zhu (PI) 12/2018 – 09/2021  
*Deliver nanomedicines to lymph nodes and tumor to potentiate melanoma immunotherapy*  
Total cost: ~\$540,000
- McGuire VA-VCU Joint Pilot Grant Zhu (PI) 09/2019 - 3/2021  
*Nanoparticle delivery of SphK2 inhibitors to both tumor cells and cancer-associated fibroblasts for intrahepatic cholangiocarcinoma therapy*  
Total cost: \$50,000
- Center Grant on Drug Abuse Research Zhu (PI), Beardsley (MPI) 04/2020-03/2021  
*Naloxone-delivery patches for anti-opioid therapy*  
Total cost: \$40,000
- VCU COVID-19 Rapid Research Fund Zhu (PI) 05/2020 – 10/2020  
*Self-applicable microneedle patches of COVID-19 mRNA vaccine for mass vaccination*  
Total cost: \$10,000

- VCU Presidential Research Quest Fund                      Zhu (PI)                      07/2019 - 12/2020  
*In vivo albumin-hitchhiking drug: drug delivery for untargetable triple negative breast cancer*  
Total cost: \$50,000
- Pilot Project Grant, Massey Cancer Center                      Zhu (PI)                      05/2019 - 04/2020  
*Combine neoantigen-specific immunotherapy and conformal radiotherapy to treat glioma*  
Total cost: \$50,000
- Endowment Fund, VCU CCTR                      Zhu (PI), Valerie (MPI)                      05/2019 - 10/2020  
*Bi-adjuvant neoantigen nanovaccines for glioma radioimmunotherapy*  
Total cost: \$50,000
- American Cancer Society Institutional Research Grant                      Zhu (PI)                      05/2019 - 04/2020  
*Drug delivery to lymph node and tumor for melanoma immunochemotherapy*  
Total cost: \$30,000

**Publications (peer-reviewed publications >100; H-index> 61; citation> 11000; \*, #: equal contribution)**

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**Since 2019**  
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**Manuscripts under review or in preparation**

1. Zhang Y, Liu X, Zhang B, Zhou S, Shen T, Mei L, Chen L, ... Liu J, **Zhu G**. Small circular mRNA vaccines for cancer immunotherapy (*in revision, Nature Biomedical Engineering*)
2. Zhang Y, Liu X, Tang W, **Zhu G**. Pulmonary delivery of small circular mRNA vaccines for protection from influenza infection (*In preparation*)
3. Zhou S, Liu X, **Zhu G**. RNA therapeutics and vaccines: from biology to engineering (review) (*In preparation*)
4. Xu Y, **Zhu G**. Pulmonary delivery of RNA therapeutics: from biology to engineering (review) (*In preparation*)
5. Alshehry Y, Cole J, Liu X, Mao HQ, **Zhu G**. Lipid nanocarriers for mRNA immunotherapeutic and vaccines (invited review, *AAPS J*) (*In preparation*)

**Published manuscripts**

1. Zhou S, Su T, **Zhu G**. cGAS-STING immunomodulation based on oligonucleotides and biomaterials. **Account of Chemical Research**. 2023
2. Cheng F, Shurong Zhou, Su T, Xiang Liu, Suling Yang, Lin S, Guo W, **Zhu G**. Single-dose injectable nanovaccine-in-hydrogel for robust immunotherapy of large tumors with abscopal effect. **Science Advances**. 2023. 9(28):eade6257
3. Cheng F, Su T, Liu Y, Qi J, Guo W, **Zhu G**. Targeting lymph nodes for systemic immunosuppression using cell-free-DNA-scavenging and cGAS-inhibiting nanomedicine-in-hydrogel for rheumatoid arthritis immunotherapy. **Advanced Science**. 2023. e2302575
4. Zhou S, Su T, Cheng F, Cole J, Liu X, Zhang B, Alam S, Liu J, Zhu G. Engineering cGAS-agonistic oligonucleotides as therapeutics and vaccine adjuvants for cancer immunotherapy. **bioRxiv**, 2023 DOI: 10.1101/2023.07.13.548237
5. Su T, Cheng F, Humble N, Zhang F, Yu G, Bos DP, Valerie K, **Zhu G**. Lymph node-targeting albumin-binding DNA scaffold for the codelivery of adjuvant and neoantigens in combination tumor immunotherapy. **Theranostics**. 2023. 13 (13), 4304

6. Su T, Xiang Liu, Cheng F, **Zhu G**. Ionizable polymeric nanocarriers for the codelivery of bi-adjuvant and neoantigens in combination tumor immunotherapy. *Bioactive Materials*. 2023. 26:169-180
7. Dain L, **Zhu G**. Nucleic acid immunotherapeutics and vaccines: a promising approach to glioblastoma multiforme treatment. *International Journal of Pharmaceutics*. 2023. 638:122924
8. Tan X, Zhao Z, Wang R, **Zhu G**. Molecular and Nanoscale Engineering of Nucleic Acid Theranostics and Vaccines. *Frontiers in Bioengineering and Biotechnology*. (Editorial) 2023. 10:1126876
9. Chen J, Li R, Knapp S, **Zhu G**, Whitener RL, Leiter EH, Mathews CE. Intergenomic and epistatic interactions control free radical mediated pancreatic  $\beta$ -cell damage. *Frontiers in Genetics*. 2022. 13:994501
10. Su T, Cheng F, Zhou S, Mei L, S Fu, F Zhang, Lin S, **Zhu G**. pH-responsive multifunctional polymer nanovaccines of STING agonist and neoantigen for cancer immunotherapy. *Advanced Science*. 2022. 9(23):e2201895
11. Liu X, Zhang Y, Zhou S, Dain L, Mei L, **Zhu G**. Circular RNA: an emerging frontier in RNA therapeutic targets, RNA therapeutics, and mRNA vaccines. *Journal of Controlled Release*. 2022. 348:84-94
12. Tang W, **Zhu G**. Pulmonary delivery of mucosal nanovaccines. *Nanoscale*. 2022, 14, 263-276
13. Shen T, Zhang Y, Mei L, Zhang X, **Zhu G**. Single-stranded circular DNA theranostics. *Theranostics*. 2022; 12(1):35-47
14. Su T, Cheng F, Pu Y, Cao J, Lin S, **Zhu G**<sup>#</sup>, He B. Polymeric micelles amplify tumor oxidative stresses through combining PDT and glutathione depletion for synergistic cancer chemotherapy. *Chemical Engineering Journal*. 2021, 411: 128561.
15. Hu L, Chen W, Zhou S, and **Zhu G**. ExoHCR: a sensitive assay to profile PD-L1 level on tumor exosomes for immunotherapeutic prognosis. *Biophysics Report*. 2020, 6:290–298
16. Zhang Y, Shen T, Zhou S, Wang W, Lin S, **Zhu G**. pH-responsive STING-activating nanovaccines for cancer immunotherapy. *Advanced Therapeutics*. 2020 3(9): 2000083
17. Ni Q, Zhang F, Liu Y, Wang Z, Yu G, Liang B<sup>@</sup>, Niu G, Su T, **Zhu G**<sup>#</sup>, Lu G<sup>#</sup>, Zhang L<sup>#</sup>, Chen X<sup>#</sup>. A Bi-adjuvant Nanovaccine that Potentiates Immunogenicity of Neoantigen for Combination Immunotherapy of Colorectal Cancer. *Science Advances*. 2020, 6 (12), eaaw6071 (#: equal contribution; @: Undergraduate student)
18. Zhou S, Chen W, Cole J<sup>@</sup>, **Zhu G**<sup>#</sup>. Delivery of nucleic acid therapeutics for cancer immunotherapy. *Medicine in Drug Discovery*. 2020. 6. 100023 (Invited review; @: Undergraduate student)
19. Shen T, Zhang Y, Zhou S, Lin S, Zhang XB, **Zhu G**. Nucleic Acid Immunotherapeutics for Cancer. *ACS Applied Bio Materials*. 2020. <https://doi.org/10.1021/acsabm.0c00101>. (Invited review)
20. Su T\*, Zhang Y\*, Valerie K, Wang XY, Lin S, **Zhu G**. STING activation in cancer immunotherapy. *Theranostics*. 2019 9(25):7759-7771.
21. Zhang Y, Lin S, Wang XY, **Zhu G**. Nanovaccines for cancer immunotherapy. *WIREs Nanomedicine & Nanobiotechnology* 2019: 11(5):e1559. (Invited review).
22. Ni Q, Pham N, Meng W, **Zhu G**<sup>#</sup>, Chen X<sup>#</sup>. Advances in the immunotherapy of type I diabetes. *Advanced Drug Delivery Review*. 2019, 139:83-91.
23. Cheng S, Jacobson O, **Zhu G**<sup>#</sup>, Chen Z, Liang SH, Tian R, Yang Z, Niu G<sup>#</sup>, Zhu X<sup>#</sup>, Chen X<sup>#</sup>. PET imaging of EGFR expression using an <sup>18</sup>F-labeled RNA aptamer. *European Journal of Nuclear Medicine and Molecular Imaging*. 2019, 46(4): 948-956.

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**Prior to 2019**  
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**First-author or corresponding-author publications**

24. **Zhu G**, Chen X. Aptamer-based targeted therapy. *Advanced Drug Delivery Review*. 2018, 134:65-78.
25. Ni Q\*, Zhang F\*, Zhang Y\*, **Zhu G**<sup>#</sup>, Wang Z, Teng Z, Wang C, Yung BC, Niu G, Lu G, Zhang L<sup>#</sup>, Chen X<sup>#</sup>. In Situ shRNA Synthesis on DNA-Polylactide Nanoparticles to Treat Multidrug Resistant Breast Cancer. *Advanced Materials*. 2018, 30(10). (Inside Cover Paper)
26. Zhang F\*, Ni Q\*, Jacobson O, Cheng S, Liao A, Wang Z, He Z, Yu G, Song J, Ma Y, Niu G, Zhang L<sup>#</sup>, **Zhu G**<sup>#</sup>, Chen X<sup>#</sup>. Polymeric nanoparticles with a glutathione-sensitive heterodimeric multifunctional prodrug for

- in vivo drug monitoring and synergistic cancer therapy. *Angewandte Chemie -- International Edition*. 2018, 57(24):7066-70.
27. **Zhu G**, Lynn GM, Jacobson O, Chen K, Liu Y, Zhang H, Ma Y, Zhang F, Tian R, Ni Q, Cheng S, Wang Z, Lu N, Yung BC, Wang Z, Lang L, Fu X, Jin A, Weiss ID, Vishwasrao H, Niu G, Shroff H, Klinman DM, Seder RA, Chen X. Albumin/vaccine nanocomplexes that assemble *in vivo* for combination cancer immunotherapy. *Nature Communications*. 2017, 8(1):1954.
  28. **Zhu G**, Mei L, Vishwasrao HD, Jacobson O, Liu Y, Yung BC, Fu X, Jin A, Niu G, Wang Q, Zhang F<sup>#</sup>, Shroff H, Chen X<sup>#</sup>. Intertwining DNA-RNA nanocapsules loaded with tumor neoantigens as synergistic nanovaccines for personalized cancer immunotherapy. *Nature Communications* 2017, 1482.
  29. Zhang F, **Zhu G**<sup>#</sup>, Jacobson O, Liu Y, Chen K, Yu G, Ni Q, Fan J, Yang Z, Xu F, Fu X, Wang Z, Ma Y, Niu G, Zhao X, X Chen<sup>#</sup>. Transformative nanomedicine of an amphiphilic camptothecin prodrug for long circulation and high tumor uptake in cancer therapy. *ACS Nano*. 2017, 11(9):8838-48.
  30. **Zhu G**, Zhang F, Ni Q, Niu G, Chen X. Efficient nanovaccine delivery in cancer immunotherapy. *ACS Nano*. 2017, 11(3):2387-92 (Perspective)
  31. **Zhu G**, Zhang H, Jacobson O, Wang Z, Chen H, Niu G, Chen X. Combinatory screening of DNA aptamers for molecular imaging of HER2 in cancer. *Bioconjugate Chemistry*. 2017, 28(4):1068-75.
  32. **Zhu G**, Liu Y, Yang X, Kim YH, Zhang H, Jia R, Liao HS, Jin A, Lin J, Aronova M, Leapman R, Nie Z, Niu G, Chen X. DNA-inorganic hybrid nanovaccine for cancer immunotherapy. *Nanoscale*. 2016, 8(12):6684-92.
  33. Zhang L\*, **Zhu G**\*, Mei L, Wu C, Qiu L, Cui C, Liu Y, Teng IT, Tan W. Self-assembled DNA immunonanostructures as multivalent CpG nanoagents. *ACS Applied Materials Interfaces*. 2015, 7(43):24069.
  34. **Zhu G**, Niu G, Chen X. Aptamer-drug conjugates. *Bioconjugate Chemistry*. 2015, 26(11):2186-97.
  35. **Zhu G**, Cansiz S, You M, Qiu L, Han D, Zhang L, Mei L, Fu T, Chen Z<sup>#</sup>, Tan W<sup>#</sup>. Nuclease-resistant synthetic drug-DNA adducts: programmable drug-DNA conjugation for targeted anticancer drug delivery. *NPG Asia Materials*. 2015, 7, e169.
  36. Mei L\*, **Zhu G**\*, Qiu L, Wu C, Chen H, Liang H, Cansiz S, Lv Y, Zhang X<sup>#</sup>, Tan W<sup>#</sup>. Self-assembled multifunctional DNA nanoflowers for the circumvention of multidrug resistance in targeted anticancer drug delivery. *Nano Research*. 2015, 8(11):3447-60.
  37. Trinh TL\*, **Zhu G**\*, Xiao X, Puszyk W, Sefah K, Wu Q, Tan W<sup>#</sup>, Liu C<sup>#</sup>. A synthetic aptamer-drug adduct for targeted liver cancer therapy. *Plos One*. 2015, 10(11):e0136673.
  38. **Zhu G**, Zheng J, Song E, Donovan M, Zhang K, Liu C, Tan W. Self-assembled, aptamer-tethered DNA nanotrains for targeted transport of molecular drugs in cancer theranostics. *Proceedings of the National Academy of Sciences of the United States of America*. 2013, 110(20):7998-8003. (Highlighted by NCI Alliance for Nanotechnology in Cancer, *Nanomedicine*, *Nano today*, University of Florida, Gainesville Sun.)
  39. **Zhu G**\*, Hu\* R, Zhao Z, Chen Z, Zhang X, Tan W. Noncanonical self-assembly of multifunctional DNA nanoflowers for biomedical applications. *Journal of the American Chemical Society*. 2013, 135(44):16438-45. (Highlighted by Nature's *Science-Business Exchange (SciBX)*, etc.)
  40. **Zhu G**, Zhang S, Song E, Zheng J, Hu R, Fang X, Tan W. Building fluorescent DNA nanodevices on target living cell surfaces. *Angewandte Chemie - International Edition*. 2013, 52(21):5490-6. (Frontispiece cover)
  41. **Zhu G**, Ye M<sup>#</sup>, Donovan MJ, Song E, Zhao Z, Tan W<sup>#</sup>. Nucleic acid aptamers: an emerging frontier in cancer therapy. *Chemical Communications*. 2012, 48(85):10472-80.
  42. **Zhu G**, Meng L, Ye M, Yang L, Sefah K, O'Donoghue MB, Chen Y, Xiong X, Huang J, Song E, Tan W. Self-assembled aptamer-based drug carriers for bispecific cytotoxicity to cancer cells. *Chemistry - an Asian Journal*. 2012, 7(7):1630-36.

#### Other publications

43. Yang W, **Zhu G**, Wang S, Yu G, Yang Z, Lin L, Zhou Z, Liu Y, Dai Y, Zhang F, Shen Z, Liu Y, He Z, Lau J, Niu G, Kiesewetter DO, Hu S, Chen X. In Situ Dendritic Cell Vaccine for Effective Cancer Immunotherapy. *ACS Nano*. 2019. 13(3):3083-3094.
44. Lin LS, Wang JF, Song J, Liu Y, **Zhu G**, Dai Y, Shen Z, Tian R, Song J, Wang Z, Tang W, Yu G, Zhou Z, Yang Z, Huang T, Niu G, Yang HH, Chen ZY, Chen X. Cooperation of endogenous and exogenous reactive oxygen species induced by zinc peroxide nanoparticles to enhance oxidative stress-based cancer therapy. *Theranostics*. 2019;9(24):7200-7209
45. Liu Y, Gong CS, Dai Y, Yang Z, Yu G, Liu Y, Zhang M, Lin L, Tang W, Zhou Z, **Zhu G**, Chen J, Jacobson O, Kiesewetter DO, Wang Z, Chen X. In situ polymerization on nanoscale metal-organic frameworks for

- enhanced physiological stability and stimulus-responsive intracellular drug delivery. *Biomaterials*. 2019, 218:119365
46. Tian R, Zhu S, Zeng Q, Lang L, Ma Y, Kiesewetter DO, Liu Y, Fu X, Lau J, **Zhu G**, Jacobson O, Wang Z, Dai Y, Yu G, Brooks BR, Liu G, Niu G, Chen X. An Albumin Sandwich Enhances in Vivo Circulation and Stability of Metabolically Labile Peptides. *Bioconjugate Chemistry*. 2019. 30(6):1711-1723.
  47. Shan L, Gao G, Wang W, Tang W, Wang Z, Yang Z, Fan W, **Zhu G**, Zhai K, Jacobson O, Dai Y, Chen X. Self-assembled green tea polyphenol-based coordination nanomaterials to improve chemotherapy efficacy by inhibition of carbonyl reductase 1. *Biomaterials*. 2019. 210:62-69.
  48. He Z, Dai Y, Li X, Guo D, Liu Y, Huang X, Jiang J, Wang S, **Zhu G**, Zhang F, Lin L, Zhu JJ<sup>#</sup>, Yu G<sup>#</sup>, Chen X<sup>#</sup>. Hybrid nanomedicine fabricated from photosensitizer-terminated metal-organic framework nanoparticles for photodynamic therapy and hypoxia-activated cascade chemotherapy. *Small*. 2019. 15(4):e1804131
  49. Shen Z, Liu T, Li Y, Lau J, Yang Z, Fan W, Zhou Z, Shi C, Ke C, Bregadze VI, Mandal SK, Liu Y<sup>#</sup>, Li Z, Xue T, **Zhu G**, Munasinghe J, Niu G, Wu A<sup>#</sup>, Chen X<sup>#</sup>. Fenton-reaction-accelerated magnetic nanoparticles for ferroptosis therapy of orthotopic brain tumors. *ACS Nano*. 2018, 12(11):11355-11365.
  50. Dai Y, Yang Z, Cheng S, Wang Z<sup>#</sup>, Zhang R, Zhu G, Wang Z, Yung BC, Tian R, Jacobson O, Xu C, Ni Q, Song J, Sun X, Niu G, Chen X<sup>#</sup>. Toxic reactive oxygen species enhanced synergistic combination therapy by self-assembled metal-phenolic network nanoparticles. *Advanced Materials*. 2018 30(8).
  51. Tian R, Jacobson O<sup>#</sup>, Niu G, Kiesewetter D, **Zhu G**, Ma Y, Wang Z, Liu G, Chen X<sup>#</sup>. Evans blue attachment enhances somatostatin receptor subtype-2 imaging and radiotherapy. *Theranostics*. 2018 8(3):735-45.
  52. Shan L, Zhuo X, Wang W, **Zhu G**, Gao G, Gu Y<sup>#</sup>, Chen X<sup>#</sup>. A paclitaxel prodrug with bifunctional folate and albumin binding moieties for both passive and active targeted cancer therapy. *Theranostics*. 2018, 8(7):2018-30
  53. Wu W, Zhang T<sup>#</sup>, Han D, Fan H, **Zhu G**, Ding X, Wu C, You M, Qiu L, Li J, Zhang L, Lian X, Hu R, Mu Y, Zhou J, Tan W<sup>#</sup>. Aligner-mediated cleavage of nucleic acids and its application to isothermal exponential amplification. *Chemical Science*. 2018, 9(11):3050-55.
  54. Chen H, Zhang W, **Zhu G**, Xie J<sup>#</sup>, Chen X<sup>#</sup>. Rethinking cancer nanotheranostics. *Nature Reviews Materials* 2017, 2, 17024.
  55. Zhang F, Khan S, Li R, Smolen JA, Zhang S, **Zhu G**, Su L, Jahnke AA, Elsabahy M, Chen X, Wooley KL. Design and development of multifunctional polyphosphoester-based nanoparticles for ultrahigh paclitaxel dual loading. *Nanoscale*. 2017 9(41):15773-7.
  56. Liu Y, Wang Z, Liu Y, **Zhu G**, Jacobson O, Fu X, Bai R, Lin X, Lu N, Yang X, Fan W, Yu G, Zhang F, Kalish H, Niu G, Nie Z<sup>#</sup>, Chen X<sup>#</sup>. Suppressing nanoparticle-mononuclear phagocyte system interactions of two-dimensional gold nanorings for improved tumor accumulation and photothermal ablation of tumors. *ACS Nano*. 2017, 11(10):10539-48
  57. Yang X, Wang Z, Zhang F, **Zhu G**, Song J, Teng GJ<sup>#</sup>, Niu G<sup>#</sup>, Chen X<sup>#</sup>. Mapping sentinel lymph node metastasis by dual-probe optical imaging. *Theranostics*. 2017, 7 (1):153-63.
  58. Kim YH, Min KH, Wang Z, Kim J, Jacobson O, Huang P, **Zhu G**, Liu Y, Yung B, Niu G<sup>#</sup>, Chen X<sup>#</sup>. Development of sialic acid-coated nanoparticles for targeting cancer and efficient evasion of the immune system. *Theranostics*. 2017, 7(4):962-73
  59. Cheng S, Lang L, Wang Z, Jacobson O, Yung B, **Zhu G**, Gu D, Ma Y, Zhu X<sup>#</sup>, Niu G<sup>#</sup>, Chen X<sup>#</sup>. Positron emission tomography imaging of prostate cancer with Ga-68-labeled gastrin-releasing peptide receptor agonist BBN<sub>7-14</sub> and antagonist RM26. *Bioconjugate Chemistry*. 2017, 29(2):410-9.
  60. Song J<sup>\*</sup>, Wu B<sup>\*</sup>, Zhou Z, **Zhu G**, Liu Y, Yang Z, Lin L, Yu G, Zhang F, Zhang G, Duan H<sup>#</sup>, Stucky GD<sup>#</sup>, Chen X<sup>#</sup>. Double-layered plasmonic-magnetic vesicles by self-assembly of janus amphiphilic gold-iron(II,III) oxide nanoparticles. *Angewandte Chemie International Edition*. 2017, 56(28):8110-4.
  61. Shen Z, Chen T, Ma X, Ren W, Zhou Z, **Zhu G**, Zhang A, Liu Y, Song J<sup>#</sup>, Li Z, Ruan H, Fan W, Lin L, Munasinghe J, Chen X<sup>#</sup>, Wu A<sup>#</sup>. Multifunctional theranostic nanoparticles based on exceedingly small magnetic iron oxide nanoparticles for T<sub>1</sub>-weighted magnetic resonance imaging and chemotherapy. *ACS Nano*. 2017, 11(11):10992-1004.
  62. Mei L, Teng Z, **Zhu G**, Liu Y, Zhang F, Zhang J, Li Y, Guan Y, Luo Y, Chen X<sup>#</sup>, Wang Q<sup>#</sup>. Silver nanocluster-embedded zein films as antimicrobial coating materials for food packaging. *ACS Applied Materials Interfaces*. 2017, 9(40):35297-304.
  63. Jacobson O<sup>\*</sup>, Weiss ID<sup>\*</sup>, Wang L, Wang Z, Yang X, Dewhurst A, Ma Y, **Zhu G**, Niu G, Kiesewetter DO, Vasdev N, Liang SH<sup>#</sup>, Chen X<sup>#</sup>. <sup>18</sup>F-labeled single-stranded DNA aptamer for PET imaging of protein tyrosine kinase-7 expression. *Journal Nuclear Medicine*. 2015, 56(11):1780-5.

64. Zhang L\*, Yang Z\*, Sefah K, Bradley KM, Hoshika S, Kim MJ, Kim HJ, **Zhu G**, Jiménez E, Cansiz S, Teng IT, Champanhac C, McLendon C, Liu C, Zhang W, Gerloff DL, Huang Z<sup>#</sup>, Tan W<sup>#</sup>, Benner SA<sup>#</sup>. Evolution of functional six-nucleotide DNA. *Journal of the American Chemical Society*. 2015, 137(21):6734-7.
65. Hu R, Liu T, Zhang XB, Yang Y, Chen T, Wu C, Liu Y, **Zhu G**, Huan S<sup>#</sup>, Fu T, Tan W<sup>#</sup>. DLISA: A DNAzyme-based ELISA for protein enzyme-free immunoassay of multiple analytes. *Analytical Chemistry*. 2015, 87(15):7746-53.
66. Lv Y, Hu R, **Zhu G**, Zhang X<sup>#</sup>, Mei L, Liu Q, Qiu L, Wu C, Tan W<sup>#</sup>. Preparation and biomedical applications of programmable and multifunctional DNA nanoflowers. *Nature Protocol*. 2015, 10(10):1508-24.
67. You M, **Zhu G**, Chen T, Donovan MJ, Tan W. Programmable and multiparameter DNA-based logic platform for cancer recognition and targeted therapy. *Journal of the American Chemical Society*. 2015, 137(2):667-74.
68. Li J, Wu S, Wu C, Qiu L, **Zhu G**, Cui C, Liu Y, Hou W, Wang Y, Zhang L, Teng IT, Yang HH<sup>#</sup>, Tan W<sup>#</sup>. Versatile surface engineering of porous nanomaterials for *in vivo* tumor targeting and therapy. *Nanoscale*. 2015, 8(16):8600-6.
69. Zhou C, Chen T, Wu C, **Zhu G**, Qiu L, Cui C, Hou W, Tan W. Aptamer CaCO<sub>3</sub> nanostructures: a facile, pH-responsive, specific platform for targeted anticancer theranostics. *Chemistry - an Asian Journal*. 2015, 10(1):166-71.
70. Qiu L, Chen T, Öçsoy I, Yasun E, Wu C, **Zhu G**, You M, Han D, Jiang J, Yu R, Tan W. A cell-targeted, size-photocontrollable, nuclear-uptake nanodrug delivery system for drug-resistant cancer therapy. *Nano Letters*. 2015, 15(1):457-63.
71. He Q, Kiesewetter DO, Qu Y, Fu X, Fan J, Huang P, Liu Y, **Zhu G**, Liu Y, Qian Z<sup>#</sup>, Chen X<sup>#</sup>. NIR-responsive on-demand release of CO from metal carbonyl-caged graphene oxide nanomedicine. *Advanced Materials*. 2015, 27(42):6741-6.
72. Song E<sup>#</sup>, Han W, Li C, Cheng D, Li L, Liu L, **Zhu G**, Song Y, Tan W<sup>#</sup>. Hyaluronic acid-decorated graphene oxide nanohybrids as nanocarriers for targeted and pH-responsive anticancer drug delivery. *ACS Applied Materials Interfaces*. 2014, 6(15):11882-90.
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#### Book chapters and general science articles

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100. Su T, Liu X, Zhou S, Ahmed, NT, **Zhu G**#. STING activation and STING nanovaccines for cancer immunotherapy. (Editors: Drs. Mansoor M. Amiji, Lara Milane) 2021
101. **Zhu G**, Qiu L, Meng H, Mei L, Tan W. Aptamers-guided DNA nanomedicine for cancer theranostics. *Aptamers Selected by Cell-SELEX for Theranostics* (Editor: Drs. Weihong Tan, Xiaohong Fang) 2015
102. **Zhu G**, Mei L, Tan W. Nanomedicine. *The Scientist* 2014, 28(8):28-33

#### Patent Applications

1. **Zhu G**, Su T, Cheng F. Degradation-enhanced vaccines, and the methods of their use thereof. 2022 (patent pending)

2. **Zhu G**, Cheng F. Small molecular degrader for cGAS and the methods of use thereof. 2021 (patent pending. Licensed out.)
3. **Zhu G**, Zhang Y. Small circular mRNA therapeutics and vaccines, and the methods of use thereof. 2021 (patent pending)
4. **Zhu G**, Chen W, Qi J, Zhang Y. Compositions of easily-deployable microneedle patches of COVID-19 DNA/RNA vaccine, and the methods of use thereof. 2020 (patent pending)
5. **Zhu G**, Zhang Y. Immunostimulatory cyclic di-nucleotide delivery system compositions and methods of use thereof. 2020 (patent pending)
6. **Zhu G**, Zhou S. Oligonucleotide agonists for Cyclic GMP-AMP synthases (cGAS), and the methods of their use thereof as immunotherapeutics and vaccines. 2020 (patent pending)
7. Chen X, **Zhu G**. Albumin binding immunomodulatory compositions. (WO2017192874A1).

### Invited Seminar Presentations

1. 8/2023. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. Nanomedicine Translational Research Program, National University of Singapore, Singapore (virtual)
2. 7/2023. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. Molecular Medicine Youth Discussion Platform, China (virtual)
3. 5/2023. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. Department of Pharmaceutical Science, University of Illinois - Chicago
4. 5/2023. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. VCU Molecules to Medicine webinar
5. 3/2023. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. CRS Bioengineering Focus Group webinar
6. 10/2022. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and infectious diseases – a focus on small circRNA vaccines”. Department of Pharmaceutics, College of Pharmacy, University of Florida, Gainesville, FL (virtual)
7. 10/2022. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy”. Department of Pharmacology and Toxicology, R. Ken Coit College of Pharmacy, University of Arizona, Tucson, AZ.
8. 6/2022. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy”. Department of Pathology, University of Virginia, VA.
9. 3/2022. “Small circular mRNA (circRNA) vaccines for cancer immunotherapy and beyond”. Department of Pharmaceutics and Pharmaceutical Chemistry, University of Utah, UT.
10. 2/2022. “Small circular mRNA (circRNA) vaccines for cancer immunotherapy and beyond”. Department of Pharmaceutical Sciences, University of Michigan – Ann Arbor, MI.
11. 1/2022. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy”. Department of Chemistry and Institute for Applied Life Sciences, University of Massachusetts Amherst, MA.
12. 1/2022. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy and beyond”. Developmental Therapeutics program, Massey Cancer Center, VCU, Richmond, VA.
13. 9/2021. “Small circular mRNA (circRNA) vaccines for cancer immunotherapy and beyond”. Department of Chemistry, University of Massachusetts Amherst, MA (virtual).
14. 9/2021. “Bivalent small circular mRNA (circRNA) vaccines for melanoma immunotherapy”. VCU Massey Cancer Center Molecules to Medicine Seminar.
15. 8/2021. “Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy”. Department of Chemistry, University of Miami, FL (virtual).
16. 4/2021. “Small circular mRNA vaccines”. Immunology Focus Group, VCU, Richmond, VA.

17. 2/2021. "Engineering and delivery of synthetic DNA/RNA for cancer immunotherapy". Towson University, Towson, MD (virtual).
18. 11/2020. "Small Patch, Big Impact". TEDxYouth @RVA. Richmond, VA
19. 10/2020. "Engineering nucleic acid immunotheranostics", Department Seminar, Department of Chemical and Life Science Engineering, VCU, Richmond, VA.
20. 10/2020. "Pharmaceutical engineering: a FedEx for drug delivery in the body." Molecules to Medicine - Novel Weapons in the Cancer Arsenal. VCU Massey Cancer Center Drug Innovation Webinar.
21. 06/2020. "Deliver Nanomedicines to Lymph Nodes and Tumor to Potentiate Melanoma Immunotherapy", Georgetown University-Howard University CCTS program, DC.
22. 06/2020. "Engineering immunotheranostics". Immunology Focus Group, VCU, Richmond, VA.
23. 02/2020. "Delivery of nucleic acid therapeutics for cancer immunotherapy". Department of Medicinal Chemistry, VCU, Richmond, VA.
24. 12/2019. "Drug delivery systems and nucleic acid therapeutics for cancer". The annual retreat of the Developmental Therapeutics program, Massey Cancer Center, VCU, Richmond, VA.
25. 10/2019. "Drug delivery using biocompatible bioconjugates and nanoparticles", VCU Pharmacology and Toxicology Seminar Series.
26. 10/2019. "Nucleic acid nanovaccine". Shanghai Jiaotong University.
27. 10/2019. "Cancer nanomedicine: applications in immunotherapy, chemotherapy, and gene therapy". Nankai University.
28. 10/2019. "Cancer nanomedicine: applications in immunotherapy, chemotherapy, and gene therapy". Tianjin University.
29. 10/2019. "Cancer nanomedicine: applications in immunotherapy, chemotherapy, and gene therapy". Beijing Institute of Technology.
30. 01/2019. "Reinvent nanomedicines for drug delivery in combination cancer therapy". The annual retreat of the Developmental Therapeutics program, Massey Cancer Center, VCU, Richmond, VA.
31. 10/2018. "Nanotechnologies and Aptamers in Cancer: From Drug Delivery to Cancer Detection". Massey Cancer Center, VCU, Richmond, VA.
32. 05/2018. "Pharmacoengineering and pharmacoimaging of nanovaccines for personalized cancer immunotherapy". The 8th International Symposium on Bioanalysis, Biomedical Engineering and Nanotechnology, Changsha, China.
33. 05/2018. "Pharmacoengineering and pharmacoimaging of nanovaccines for personalized cancer immunotherapy". Hunan University, Changsha, China.
34. 05/2018. "Pharmacoengineering and pharmacoimaging of nanovaccines for personalized cancer immunotherapy". School of Pharmacy, University of North Carolina (UNC) - Chapel Hill, North Carolina
35. 02/2018. "Pharmacoengineering and pharmacoimaging of nanovaccines for personalized cancer immunotherapy". Department of Pharmacy, National University of Singapore, Singapore.
36. 02/2018. "Pharmacoengineering and pharmacoimaging of nanovaccines for personalized cancer immunotherapy". Department of Pharmaceutics, VCU, Richmond, VA.
37. 2016. "Nucleic acid nanovaccines for cancer immunotherapy", College of Pharmacy, Southwest University, Chongqing, China.
38. 2016. "Nucleic acid nanovaccines for cancer immunotherapy", College of Chemistry and Chemical Engineering, Nankai University, Tianjin, China.

### **Selected Conference Presentations**

1. 5/2023. "Small circular mRNA vaccines". PEGS, Boston, MA.
2. 10/2022. "Small circular mRNA vaccines". AAPS annual meeting, Boston, MA.
3. 10/2022. "Small circular mRNA vaccines". 18<sup>th</sup> Oligonucleotide Therapeutics Society annual meeting, Phoenix, AZ.
4. 6/2022. "Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy". The International Conference on Precision Nanomedicine in Theranostics & The 2022 Annual Meeting of Taiwan Nanomedicine Society. 7/2022 (virtual).
5. 6/2022. "Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy". 2022 Lawrence Research Retreat, VCU Massey Cancer Center, Henrico, VA.

6. 6/2022. "Engineering and delivery of nucleic acid therapeutics and vaccines for cancer immunotherapy". The 7<sup>th</sup> InSight Symposium, organized by AAPS student chapters (virtual).
7. 11/2021. "Small circular mRNA vaccines". The 9<sup>th</sup> International mRNA Health Conference, Berlin, Germany (virtual)
8. 10/2021. "Small circular mRNA vaccines". AAPS annual meeting. Philadelphia, PA (virtual)
9. 09/2021. "Small circular mRNA vaccines". Oligonucleotide Therapeutics Society annual meeting (virtual)
10. 06/2021. "Small circular mRNA vaccines". The 6<sup>th</sup> InSight Symposium, organized by AAPS student chapters.
11. 06/2020. "pH-responsive delivery of STING agonists as cancer nanovaccine". Controlled Drug Release (CRS) virtual annual meeting.
12. 10/2019. "Responsive STING-activating cancer nanovaccine". Oligonucleotide Therapeutics Society (OTS) annual meeting. Munich, Germany.
13. 04/2019. "Albumin-binding DNA/RNA therapeutics: efficient and versatile delivery". RNA Consortium. CA.
14. 03/2019. Pittcon. "*In vivo* pharmacoinaging and delivery of nucleic acid therapeutics and probes". PA.
15. 10/2018. The Society for Immunotherapy of Cancer Annual Meeting "Albumin-binding vaccines for efficient lymph node delivery in combination cancer immunotherapy". Washington DC.
16. 10/2018. OTS Annual Meeting. "Albumin-binding oligonucleotides for efficient drug delivery". Seattle, WA.
17. 12/2017. The 2<sup>nd</sup> Mid-Atlantic DNA Nanotechnology Symposium (MADNano), "Intertwining DNA-RNA nanocapsules loaded with tumor neoantigens as synergistic nanovaccines for personalized cancer immunotherapy", National Institute of Standards and Technology (NIST), MD.
18. 11/2017. The Society for Immunotherapy of Cancer Annual Meeting. "Albumin/vaccine nanocomplexes that assemble *in vivo* for combination cancer immunotherapy". National Harbor, MD.
19. 10/2017. Cancer Immunology and Immunotherapy: From Conception to Delivery. "Albumin/vaccine nanocomplexes that assemble *in vivo* for combination cancer immunotherapy". NCI, Bethesda, MD.
20. 09/2017. World Molecular Imaging Congress (WMIC) meeting, "Systematic imaging of *in-vivo*-assembled nanovaccines for cancer immunotherapy". Philadelphia, PA.
21. 06/2017. The 2<sup>nd</sup> NIH-CSSA Annual Research Symposium. "Albumin/vaccine nanocomplexes that assemble *in vivo* for combination cancer immunotherapy". NIH, Bethesda, MD.
22. 09/2016. The 14<sup>th</sup> International Nanomedicine & Drug Delivery Symposium (nanoDDS'16), "DNA nanovaccine for cancer immunotherapy". Baltimore, MD.
23. 04/2016. Accelerating Anticancer Agent Development and Validation (AAADV) Workshop: "Study design considerations in evaluating combinations of novel immune-modulatory drugs and targeted agents". Bethesda, MD.
24. 10/2014. Cancer Immunology and Immunotherapy: Delivering the Promise. "DNA-inorganic hybrid nanovaccine for cancer immunotherapy". NCI, Bethesda, MD.
25. 10/2014. The 10<sup>th</sup> Annual Meeting of the Oligonucleotide Therapeutics Society. "DNA-inorganic hybrid nanovaccine for cancer immunotherapy". San Diego, CA.
26. 08/2014. The 1<sup>st</sup> MADNano. "DNA-inorganic hybrid nanovaccine for cancer immunotherapy". Johns Hopkins University, Baltimore, MD.
27. 04/2014. The 2<sup>nd</sup> UF postdoc symposium. "Nuclease-resistant synthetic drug-DNA adducts: programmable and site-specific drug-DNA conjugation for targeted anticancer drug delivery". UF.
28. 03/2014. The 65<sup>th</sup> Pittsburgh Conference on Anal. Chem. and Applied Spectroscopy (Pittcon). "Drug-DNA adduct for simple yet efficient targeted drug delivery". Chicago, IL.
29. 11/2013. BioFlorida Scientific Exchange Event. "Molecular medicines and nanomedicines for disease theranostics". UF. Gainesville, FL.
30. 09/2013. NanoFlorida, "Noncanonical self-assembly of multifunctional DNA nanoflowers for versatile biomedical applications". Gainesville, FL.
31. 06/2013. Nanotechnologies in Cancer Diagnosis, Therapy, and Prevention, the New York Academy of Sciences. "Self-assembled DNA nanotrains for targeted cancer theranostics". NY.
32. 04/2013. UF Shands Cancer Center Research Poster Day, "Nature-inspired drug-DNA adduct for simple yet efficient targeted drug delivery". Gainesville, FL.
33. 03/2013. The 64<sup>th</sup> Pittcon: Conference & Expo. "Noncanonical self-assembly of multifunctional DNA nanoflowers for biomedical applications". Philadelphia, PA.

### **Selected Conference Presentations by Trainees**

34. Zhou S, **Zhu G**. Nucleic acid therapeutics as cGAS agonist for cancer immunotherapy. 24<sup>th</sup> Annual VCU School of Pharmacy Research and Career Day. 02/2022, Richmond, Virginia.
35. Zhou S, **Zhu G**. A Novel DNA Therapeutics as Cancer Vaccine Adjuvant in Cancer Immunotherapy. AAPS PharmSci 360 (virtual). Oct, 2021. Philadelphia, PA.
36. Zhou S, Su T, Dain L, **Zhu G**. A Novel DNA Therapeutics as Cancer Vaccine Adjuvant in Cancer Immunotherapy. Controlled Release Society (CRS) Annual Meeting Virtual Conference. July, 2021.
37. Su T, **Zhu G**. pH-responsive polymeric nanovaccines for the co-delivery of STING agonist and neoantigens for cancer immunotherapy. 23<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Jan, 2021, Richmond, VA.
38. Cheng F, **Zhu G**. cGAS-Targeting PROTACs: towards immunotherapy of autoimmune diseases. 23<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Jan, 2021, Richmond, VA.
39. Zhang Y, **Zhu G**. Self-adjuvanted mini-circular RNA vaccines. 23<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Jan, 2021, Richmond, VA.
40. Zhou S, **Zhu G**. A Novel DNA Therapeutics as Cancer Vaccine Adjuvant in Cancer Immunotherapy. 23<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Feb, 2021, Richmond, VA.
41. Zhou S, **Zhu G**. Engineering dsDNA for cGAS-STING activation *via* hybridization chain reaction. 16<sup>th</sup> Annual meeting of the Oligonucleotide Therapeutics Society (virtual). Sept, 2020.
42. Hu L, **Zhu G**. Immuno-HCR: a sensitive immuno-assay to profile PD-L1 level on tumor exosomes for immunotherapy prognosis. 22<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Sept, 2019, Richmond, VA.
43. Chen W, Cole J, **Zhu G**. Deliver ADAR-targeting nucleic acid therapeutics for immune sensitization. 22<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Sept, 2019, Richmond, VA.
44. Zhang Y, **Zhu G**. pH responsive DNA nanoparticles for the delivery of STING agonists in cancer immunotherapy. 22<sup>rd</sup> Annual VCU School of Pharmacy Research and Career Day. Sept, 2019, Richmond, VA.

## Teaching

### Teaching at University of Michigan

Course	Title	Time	Semester	Student	Credit	Lecture hours	Role
PSCI701	Equilibria and dose forms	2023 –	Fall	Graduate	2		Coordinator/ Instructor

### Teaching at VCU

Note: I was an NIH KL2 scholar which sponsors 75% of my effort for research (Dec. 2018 – Sep. 2021), so I have only ~ 20% effort for teaching. Despite limited effort, I managed to co-found, coordinate, and teach 11 different undergraduate, graduate, and professional pharmacist courses (see table below). I have been an coordinator for two courses, and I co-founded two courses (6 total credits) for the new PhD program in Pharmaceutical Engineering and Science. My overall teaching evaluation at VCU has been great (>3.5/4) for all the courses.

Course	Title	Time	Semester	Student	Credit	Lecture hours	Role
PESC 709	Pharmaceutical Engineering Laboratory II	2022 –	Spring	Graduate/ undergraduate	1	6	Instructor
PHAR 549	Personalized Medicine	2021 –	Fall	<b>PharmD professional</b>	1	1	Instructor

<b>PESC 605</b>	Advanced Topics in Pharmaceutical Engineering I	2021 –	Spring	Graduate/ undergraduate	3	18	<b>Coordinator, co-founder, instructor</b>
<b>PCEU 509</b>	Pharmaceutics and Biopharmaceutics II	2021 –	Spring	<b>PharmD professional</b>	2	4	Instructor
<b>MEDC 310</b>	Medicinal Chemistry and Drug Design	2021 –	Spring	Graduate	1	1	Instructor
<b>OCMB 702</b>	Oral Pathogenesis	2021 –	Spring	Graduate	2	2	Instructor
<b>PESC 505</b>	Pharmaceutical Engineering Fundamentals I	2020 –	Fall	Graduate/ undergraduate	3	18	<b>Co-founder, instructor</b>
<b>PSCI 607</b>	Introduction to Pharmaceutical Sciences	2019 –	Fall	Graduate	1	1	<b>Co- coordinator</b>
<b>PSCI 607</b>	Introduction to Pharmaceutical Sciences	2019 –	Spring	Graduate	1	0	<b>Co- coordinator</b>
<b>ENGR 591</b>	Pharmaceutical Engineering	2018	Fall	Graduate/ undergraduate	2	2	Instructor
<b>PCEU 691</b>	Special Topics in Pharmaceutics	2018-	Spring/ Fall	Graduate/	1	1	Instructor

### Trainee Mentorship

(Blue highlight: woman trainees; Underlined: underrepresented minority trainees)

#### Instructors and postdoctoral associates/fellows

- Shimiao Liao, PhD, University of Science and Technology of China (2023 - )
- Ri Tang, PhD, Shanghai Jiaotong University (2023 - )
- Yu Hao, PhD, Soochow University (2023 - )
- Qiyang Wang, PhD, China Pharmaceutical University (2023 - )
- You Xu, PhD, University of Copenhagen, Denmark. (03/2023 - )
- Suling Yang, PhD, Chinese Academy of Sciences, China. (08/2022 - )
- Lei Mei, PhD, University of Maryland – College Park (01/2021 - 6/2023)
- Furong Cheng, PhD, Sichuan University, China. (10/2019 - 12/2022)
- Yu Zhang, PhD, Lanzhou University, China. (01/2019 - 2/2022)
- Ting Su, PhD, Sichuan University, China. (12/2018 - 12/2022)
- Wei Tang, PhD, University of Georgia (01/2021 – 06/2021). Current position: Assistant Professor of School of Pharmacy, National University of Singapore, Singapore.
- Wenjie Chen, PhD, Macquarie University, Australia (02/2019 – 09/2020). Current position: Professor, College of Pharmacy, Guangzhou Medical University, China.
- Tingting Shen, PhD, Lanzhou University, China (01/2019 – 06/2021). Current position: research scientist, Institute of Cancer and Basic Medicine, Chinese Academy of Sciences, China).

#### Graduate students

- Yasir Abdulaziz Alshehry, MS student in Pharmaceutical Sciences (08/2022 - 06/2023) (stayed at VCU)
- Lauren Dain, MD-PhD student in Immunology and Microbiology (08/2022 - 12/2022) (stayed at VCU)
- Xiang Liu, PhD student in Pharmaceutical Sciences (2021 - )
- Jialong Qi, PhD candidate (Visiting 2019 – 2021)
- Shurong Zhou, PhD candidate in Pharmaceutical Sciences (2019 - )

#### PharmD students

- Janet Cole (08/2019 - 2020)

#### Undergraduate students

- Diana Barr (VCU PharmEng REU student) (06/2021 – 07/2021)

- [Jenille Jade Llorico](#) (undergraduate student, Virginia State University. VCU PharmEng REU student) (06/2022 – 07/2022)
- [Mariam Obaji](#) (VCU PharmEng REU student) (06/2022 – 07/2022)
- [Jaila Walton](#) (undergraduate student, Virginia State University. Massey Cancer Center REU student) (06/2022 – 07/2022)
- [Shaheer Alam](#) (VCU Honors College) (enrolled in VCU Honors Summer Undergraduate Research Program in 2022) (02/2022 - 06/2023)
- John Pham (VCU Chemistry) (10/2020 – 7/2021)
- Moazan Rehman (VCU Biology) (08/2020 – 06/2021)
- Kush Shah (VCU Honors College) (06/2019 – 02/2020)
- Jay Bisen (VCU Guaranteed Medical Program) (2019)

#### Visiting scholars

- Weinan Wang, PhD, Peking University, China. (05/2019 – 07/2020)
- Lujun Hu, PhD, Jiangnan University, China. (04/2019 – 07/2020)
- [Yongjian Wang](#), PhD, Nankai University, China. (04/2019)

#### Graduate Student Advisory Committee

- Alexander Meyer (Department of Pharmaceutical Sciences, University of Michigan)
- [Mona Alkhairi](#) (VCU Department of Medicinal Chemistry)
- Hadi Sudarjat (VCU Department of Pharmaceutics)
- Hanming Zhang (VCU Department of Pharmaceutics)
- Sulaiman Alhudaithi (VCU Department of Pharmaceutics)
- [Fatemah Sunbul](#) (VCU Department of Pharmaceutics)
- [Sarah Aboelela](#) (VCU Department of Pharmaceutics)

#### Professional Service

##### • Grant review

###### ▪ External

- 2023 (July) *Ad hoc* reviewer, NIH Nucleic Acid Therapeutic Delivery (NATD) study section.
- 2023 (Feb) *Ad hoc* reviewer, NIH NATD study section.
- 2023 *Ad hoc* reviewer, NIH/NIAID SEP for BAA-NIAID-75N93022R00009: Vaccine Adjuvant Development Program in Infectious and Immune-Mediated Diseases.
- 2023 *Ad hoc* reviewer, Natural Sciences and Engineering Research Council of Canada (NSERC)
- 2022 *Ad hoc* reviewer, Oak Ridge Associated Universities (ORAU).
- 2022 *Ad hoc* reviewer, NIH ZRG1 OTC D08 study section.
- 2021 *Ad hoc* reviewer, NIH SBIR/STTR (ZRG1 AIDC-P11) study section.
- 2020 *Ad hoc* reviewer, NIH Radiation Therapy and Biology (RTB) study section.
- 2019 *Ad hoc* reviewer, Breast Cancer Research in New Zealand
- 2019 *Ad hoc* reviewer, Oak Ridge Associated Universities (ORAU).

###### ▪ Internal

- 2021 – 2024 Reviewer, ACS-IRG at VCU.
- 2021 *Ad hoc* reviewer, Massey Cancer Center Molecules to Medicine Pilot grants.
- 2020 *Ad hoc* reviewer, Massey Cancer Center SPORE pilot grants.

##### • Journal Editorial

- 2022. Guest editor, Special Issue “Molecular and Nanoscale Engineering of Nucleic Acid Theranostics and Vaccines”, *Frontiers In Bioengineering and Biotechnology*

##### • Editorial board membership

- *AAPS Journal*
- *Journal of Nanotheranostics*
- *Exploration*

##### • Reviewer for the following selected journals

- *Nature Cancer*
- *Nature Communications*
- *Science Advances*
- *Molecular Therapy – Nucleic Acids*
- *ACS Nano*,
- *Adv. Sci.*
- *Adv. Thera.*
- *Adv. Mater.*
- *Biomaterials*
- *Bioactive Materials*
- *Adv. Funct. Mater.*
- *Adv. Healthc. Mater.*
- *ACS Appl. Mater. Interfaces*
- *ACS Materials Letter*
- *Anal. Chem.*
- *Bioconjug. Chem.*
- *Biomaterial Science*
- *Biosens. Bioelectron.*
- *Biosensors*
- *ChemMedChem.*
- *Chemical Reviews*
- *Chem. Commun.*
- *Chem. Mater.*
- *J. Am. Chem. Soc.*
- *Langmuir*
- *Medicine in Drug Discovery*
- *Molecular Pharmaceutics*
- *Nanoscale*
- *Nano Res.*
- *Plos One*
- *RSC Adv.*
- *Sci. Rep.*
- *Small*
- *Theranostics*
- *WIREs-Nanomedicine and Nanotechnology*
- **Service in Professional Societies**
  - 2022 Discussion leader, the Nanomedicine Drug Delivery Symposium (nanoDDS)
  - 2022 – Abstract reviewer, AAPS, CRS, Biomedical Engineering Society (BMES), etc
  - 2021 – 2022 *Equity, Diversity, and Inclusion (ED&I) committee*, Controlled Release Society
- **Service to Institution**
  - VCU**
    - 2022 – 2023 Advisor Committee, Bioinformatics Shared Resource, VCU Massey Cancer Center
    - 2022 Dean Search Committee, VCU School of Pharmacy
  - VCU School of Pharmacy**
    - 2023 DPOS faculty search committee, VCU School of Pharmacy
    - 2021 – 2023 ACPE Self-study Subcommittee, VCU School of Pharmacy
    - 2021 – 2023 Dean's Award Committee, VCU School of Pharmacy
    - 2019 – 2021 Lead Judge, Research and career day, VCU School of Pharmacy
    - 2020 – 2023 Academic Performance Committee, VCU School of Pharmacy
    - 2020 – 2023 Faculty Awards Committee, VCU School of Pharmacy
    - 2018 – 2020 Outcomes & Assessment Committee, VCU School of Pharmacy
    - 2019 – 2020 Graduate Affairs Committee, VCU School of Pharmacy
    - 2019 – 2020 Promotion and Tenure Guidelines Committee, VCU School of Pharmacy
- VCU Department of Pharmaceutics**



- 2019 – 2023 Student award selection committee, VCU Department of Pharmaceutics

## Professional Membership

- Sigma Xi, The Scientific Research Honor Society
- Oligonucleotide Therapeutics Society (OTS)
- American Association of Pharmaceutical Scientists (AAPS)
- Controlled Release Society (CRS)
- Society for Immunotherapy of Cancer (SITC)
- American Chemical Society (ACS)

## Outreach, Equity, Diversity, and Inclusion (ED&I)

### Outreach and ED&I activities

2021	Member, Equity, Diversity, and Inclusion (ED&I) Committee, Controlled Release Society
03/2021	Invited Speaker, "The Journey" series, AAPS VCU Student Chapter
11/2020	Invited Speaker, TEDxYouth @RVA: "Small Patch, Big Impact". Richmond, VA
10/2020	Invited Speaker, Molecules to Medicine - Novel Weapons in the Cancer Arsenal. "Pharmaceutical engineering: a FedEx for drug delivery in the body." VCU Massey Cancer Center Drug Innovation Webinar.
03/2020	Junior Division Judge: Metro Richmond STEM Fair Team
04/2020	Volunteer: Girl Scout Science Day, Women in Science at VCU (cancelled due to COVID-19 pandemic)
9/2019	Public seminar: "Using DNA/RNA as Drugs: From Discovery to Development", VCU Discovery Dialogues.
6/2019	Public seminar: "Nucleic acid therapeutics". Kiwanis Club, Williamsburg, VA.
2014	Publication of a general science article " <i>Nanomedicine</i> " in <i>The Scientist</i> (Zhu G, Mei L, Tan W. 2014, 28(8):28-33).

### Statement on equity, diversity, and inclusion

**Philosophy.** I have spent great effort to enhance the equity and diversity of research and students, promote inclusion, and train minority students in teaching and mentoring. A team of diverse researchers enrich intellectual and social exchange, and generate creative and pioneering research that can make a great impact. Also, multidisciplinary studies can provide the much-needed diversity for accelerated scientific thinking. While as the group graduate leader for over 30 members at the University of Florida, coordinating the research interest and activities has been both challenging and rewarding. We intentionally formed research teams of students with the same central interest but distinct intellectual or cultural backgrounds. While at VCU, I continue to implement this philosophy and strive to promote the diversity and inclusion in my research group and in classes. We have enjoyed the moments at the brain-storm meetings where free, deep and intensive discussions lasted for whole mornings, the moments that students from distinct backgrounds brought up mind-blowing ideas from unusual perspectives, and the moments when students were encouraged by their experience in our lab to diving into the next adventure in their careers.

I advocate diversity and inclusion in my research and training. My research group includes members from 3 different countries. I am a member of the **ED&I (equity, diversity, and inclusion) taskforce** of the Controlled Release Society (CRS). I am also a member of the **Center On Health Disparities** at VCU.

I strive to **provide education and training for minorities and students from a diverse background**. My lab has one underrepresented student (Janet Cole) and one Muslim student. During Janet's stay in the group from his undergraduate years to now as a PharmD student, she is actively involved in the research and training, and coauthored a publication (*Medicine in Drug Discovery*. 2020) and multiple poster presentations. Under my support, Janet was admitted into VCU PharmD program after graduation from VCU biology major.

In addition, under my advice, my graduate student Ms. Shurong Zhou was selected as a mentor for VCU **Research and Mentoring (RAM) for underrepresented high school students in local community**.

I am an advocate for **women-in-STEM**. Out of 14 postdocs, graduate students, and PharmD students, 8 of them are women. I was also selected as a volunteer for Girl Scout Science Day organized by **VCU Women in Science**.

I promote community engagement. I have presented public lectures at local communities, including a TEDxYouth @ RVA, a club talk at Kiwanis Club (Williamsburg, VA), and a public seminar at VCU Discovery Dialogues.