

Jinming Gao, Ph.D.

*Elaine Dewey Sammons Distinguished Chair in Cancer Research,
in Honor of Eugene P. Frenkel, M.D.*

Department of Biomedical Engineering

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Research Synopsis

Cooperativity manifests itself from biology to society. In biology, molecular cooperativity often leads to emergent properties and functions where the whole is bigger than sum of the parts. **We are learning from ‘cues’ in nature to create cooperative nanosystems to amplify or digitize biological signals to improve the precision of medicine.** Such examples include the invention of transistor-like pH threshold sensors for cancer imaging and surgery, and polyvalent STING-activating nanoparticles for cancer immunotherapy. We are closely collaborating with physicians and biotech companies to translate lab inventions to the clinics to advance patient care. pH sensor technology (Pegsitacianine) has received breakthrough therapy designation from the Food and Drug Administration in cytoreductive surgery of peritoneal metastasis.

Education

Postdoc 1996-1998	Massachusetts Institute of Technology, Cambridge, MA Advisor: Dr. Robert S. Langer, Research on <i>Tissue Engineering of Vascular Prostheses</i>
Ph.D. 1991-1996	Harvard University, Cambridge, MA Advisor: Dr. George M. Whitesides, Thesis on <i>Protein Charge Ladders and Molecular Recognition</i>
B.S. 1987-1991	Peking University, Beijing, China Advisor: Dr. Xianping Xu, Undergraduate Thesis on <i>Solid Super Acids</i>

Academic Appointments

2020-	Elaine Dewey Sammons Distinguished Chair in Cancer Research, in Honor of Eugene P. Frenkel, MD, UT Southwestern Medical Center, Dallas, TX
2010-	Professor of Biomedical Engineering (2023-), Cell Biology (2020-), Otolaryngology (2016-), and Pharmacology, Harold C. Simmons Comprehensive Cancer Center, UT Southwestern Medical Center, Dallas, TX
2005-2010	Associate Professor of Oncology and Pharmacology with tenure, Harold C. Simmons Comprehensive Cancer Center, UT Southwestern Medical Center, Dallas, TX
2005-	Adjunct Professor of Chemistry and Bioengineering (2010-), University of Texas at Dallas, Richardson, TX
2004-2005	Associate Professor with tenure, Departments of Biomedical Engineering and Radiology, Case Western Reserve University, Cleveland, OH
1998-2004	Assistant Professor, Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH

Honor and Service

2024	Outstanding Investigator Award, National Cancer Institute
2024	Fellow, American Institute for Medical and Biological Engineering (AIMBE)
2023	Fellow, National Academy of Inventors (NAI)
2021-2023	Chief Scientific Officer (part-time), OncoNano Medicine, Inc.
2020	Elaine Dewey Sammons Distinguished Chair in Cancer Research, in Honor of Eugene P. Frenkel, MD
2019	Immuno-engineering to Improve Immunotherapy (I3) Center Award, Beau Biden Cancer Moonshot SM Initiative
2019	Member of Steering Committee, Immuno-Oncology Translational Network, NCI
2018-2022	Member of External Advisory Council, Center for Scientific Review, NIH
2018-2020	Robert B. and Virginia Payne Professorship in Oncology
2018	Mendelson-Young Endowment in Cancer Therapeutics
2014-2016	Chair of GDD study section, NIH
2015	Distinguished lecture, College of Pharmacy, Ohio State University
2011	Elkin lecture, Winship Comprehensive Cancer Center, Emory University
2011	Distinguished Scientist Award from the Society of Experimental Biology and Medicine
2000	Young Investigator Award from the Whitaker Foundation
1991	Highest honor Guang-Hua fellowship, Peking University, Beijing, China

Commercialization and Clinical Translation Efforts

I hold 18 issued US patents and 72 foreign patents in the fields of polymer biomaterials, nanoparticle drug delivery, tumor surgical imaging, and cancer immunotherapy, 13 of which have been licensed to biotech companies. I am the scientific founder of OncoNano Medicine and served as its chief scientific officer (2021-2023) to help translate the proton transistor nanoparticle technology from the lab to the clinics. OncoNano has raised \$150 million from private investment and government funding for commercial development. It has licensed compositions of matter and methods of use patents from UT Southwestern. Its first clinical product, Pegsitacianine (ONM-100), has completed Phase 1/2 clinical trials in 140 patients and received the fast-track status and breakthrough therapy designation from the Food and Drug Administration. ONM-501, a 'shock-and-lock' STING activating nanoparticle, is currently in a multi-center, Phase I clinical trial in patients with advanced solid tumors (NCT06022029).

Impact Summary

>150 publications, >39,000 citations, ~2500 citations per year, H-index = 80

https://scholar.google.com/citations?user=P88_M-4AAAAJ&hl=en

Contributions to Science (with annotations to selected publications)

1. Molecular basis of cooperativity in therapeutic design

Ma X, Wang YG, Zhao T, Li Y, Su LC, Wang Z, Huang G, Sumer BD, Gao J. Ultra-pH Sensitive Nanoprobe Library with Broad pH Tunability and Fluorescence Response. *J. Am. Chem. Soc.* 2014, 136, 11085-11092. (Using hydrophobic nanophase separation to fine tune threshold pH to achieve a library of nanosensors with tunable pH from 4.0 to 7.4; Selected as ACS Editors' Choice)

- Li Y, Zhao T, Huang G, Sumer B, Gao J. Molecular Basis of Cooperativity in pH-Triggered Supramolecular Self-Assembly. **Nature Commun.** 2016, 7, 13214. (*Uncovered molecular mechanism of pH cooperativity and identified binary all-or-nothing proton distribution phenotype with a Hill coefficient of 51, largest reported in the literature*)
- Li Y, Wang Y, Huang G, Gao J. Cooperativity Principles in Self-Assembled Nanomedicine. **Chem. Rev.** 2018, 118, 5359-5391. (*Theory on molecular origin of cooperative behaviors in nature and engineered systems. Implementation of cooperativity design in nanomedicine to achieve therapeutic precision and robust action*).
- Wilhelm J, Wang Z, Sumer BD, Gao J. Exploiting nanoscale cooperativity for precision medicine. **Adv. Drug Deliv. Rev.** 2020, 158, 63-72. (*Implementation of molecular cooperativity in the design of nanotherapeutics to improve the therapeutic window*)

2. Threshold pH sensors for cancer imaging and surgery

- Wang Y, Zhou K, Huang G, Hensley C, Huang X, Ma X, Zhao T, Sumer BD, DeBerardinis RJ, Gao J. A Nanoparticle-based Strategy for the Imaging of a Broad Range of Tumours by Nonlinear Amplification of Microenvironment Signals. **Nature Mater.** 2014, 13, 204-212. (*Demonstration of amplifying tumor microenvironmental signals as a universal strategy for tumor imaging. Featured by SciBX, Nature Materials News and Views, Materials 360, Nano Today and Chemistry World, etc.*)
- Zhao T, Huang G, Yang S, Ramezani, S, Li Y, Wang Y, Ma X, Xie XJ, Thibodeaux J, Sun X, Sumer BD, Gao J. A Transistor-like pH Nanoprobe for Tumour Detection and Image-Guided Surgery. **Nature Biomed. Eng.** 2016, 1, 0006. (*Chemical transistor concept to achieve binary tumor margin delineation to improve cancer detection and surgery. Featured by Science Daily News; Dallas Morning News, Phys.org, Nature Middle East, Breitbart News Network; Yahoo! News, etc. Coverage by Local NBC and CBS stations. Altmetric score of 154, and ranked in the 98% of >230,000 tracked articles of a similar age in all journals*)
- Huang G, Zhao T, Wang C, Nham K, Xiong Y, Gao X, Wang Y, Hao G, Ge WP, Sun XK, Sumer BD, Gao J. PET Imaging of Occult Malignancy by Chemical Integration of Tumor Acidosis. **Nature Biomed. Eng.** 2020, 4, 314-324. (*Elucidation of dose accumulation as the secondary digital output by the pH transistor tracer that leads to non-invasive detection of occult diseases by positron emission tomography*)
- Voskuil FJ, Steinkamp PJ, Zhao T, van der Begt B, Koller M, Doff JJ, Jayalakshmi Y, Hartung JP, Gao J, Sumer BD, Witjes MJH, van Dam GM. Exploiting metabolic acidosis in solid cancers using a tumor-agnostic pH-activatable nanoprobe for fluorescence-guided surgery. **Nature Commun.** 2020, 11, 3257. (*First-in-human clinical trial of pH threshold sensor ONM-100 in 30 cancer patients with breast, head/neck, colorectal and esophageal cancers. Imaging efficacy in all patients demonstrating the pan-tumor characteristics without severe adverse events*)
- Feng Q, Bennett Z, Grichuk A, Huang TY, Faubert B, Huang G, Chen MY, DeBerardinis RJ, Sumer BD, Gao J. Severely polarized extracellular acidity around tumor cells. **Nature Biomed. Eng.** 2024, doi.org/10.1038/s41551-024-01178-7. (*Discovery of polarized secretion of lactic acid from cancer cells with a severe acidotic threshold much lower than literature report; new insights to exploit severe pH threshold for cancer diagnosis and drug therapy*)

3. STING and nano-immuno-oncology

- Luo M, Wang H, Wang Z, Cai H, Lu Z, Li Y, Du M, Huang G, Wang C, Chen X, Porembka MR, Lea J, Frankel AE, Fu Y, Chen ZJ, Gao J. A STING-activating nanovaccine for cancer immunotherapy. **Nature**

Nanotech. 2017, 12, 648-654. (*Spatio-temporal orchestration of antigen delivery and innate stimulation using minimalist (single) polymer design with broad efficacy in multiple tumor models; News and Views by Nature Nanotechnology, highlighted by EurekAlert, Phys.org, Nanowerk, etc (>20 news outlets). Altmetric score of 164, ranked in the 98% of >190,000 tracked articles of a similar age in all journals*).

Huang TY, Feng Q, Wang ZH, Li W, Sun ZC, Wilhelm J, Huang G, Vo T, Sumer BD, Gao J. Tumor-targeted Inhibition of Monocarboxylate Transporter 1 Improves T Cell Immunotherapy of Solid Tumors. **Adv. Healthc. Mater.** 2021, 10, e2000549. (*Nano delivery of a tumor acidotic inhibitor dramatically reduced the dose by >200 fold with increased antitumor efficacy and safety over free drug alone*)

Wang X, Wilhelm, J, Li W, Li S, Wang Z, Huang G, Wang J, Tang H, Khorsandi S, Sun Z, Evers B, Gao J. Polycarbonate-based Ultra-pH Sensitive Nanoparticles Improve Therapeutic Window. **Nature Commun.** 2020, 11, 5828. (*Design and syntheses of new biodegradable UPS polymers with improved safety and biocompatibility in T cell vaccine applications*)

Li S, Luo M, Wang Z, Feng Q, Wilhelm J, Wang X, Wang J, Cholka A, Fu Y, Sumer BD, Yu HT, Gao J. A Prolonged activation of innate immune pathways by a polyvalent STING agonist. **Nature Biomed. Eng.** 2021, 5, 455-466. (*Biochemical elucidation of STING activation by PC7A through biomolecular condensation. PC7A led to prolonged STING activation and sustained expression of proinflammatory cytokines over cGAMP, a natural agonist. Altmetric score of 157, and ranked in the 98% of >300,000 tracked articles of a similar age in all journals*)

Wang J, Li S, Wang M, Wang X, Chen SQ, Sun ZC, Ren XB, Huang G, Sumer BD, Yan N, Fu YX, Gao J. STING Licensing of Type I Dendritic Cells Potentiates Antitumor Immunity. **Science Immunol.** 2024, 9, 3945. (*Discovery of importance of type 1 conventional dendritic cells for STING-mediated antitumor immunity*)

4. Lysosome imaging and metabolism

Zhou KJ, Wang YG, Huang X, Luby-Phelps K, Sumer BD, Gao J. Tunable, Ultra-Sensitive pH Responsive Nanoparticles Targeting Specific Endocytic Organelles in Living Cells. **Angew. Chem. Int. Ed.** 2011, 50, 6109-6114. (*First report on ultra-pH sensitive nanoparticles to differentiate luminal pH in the early endosomes, late endosomes and lysosomes*)

Wang C, Wang Y, Li Y, Bodemann B, Zhao T, Ma X, Huang G, Hu Z, DeBerardinis RJ, White MA, Gao J. A Nanobuffer Reporter Library for Fine-Scale Imaging and Perturbation of Endocytic Organelles. **Nature Commun.** 2015, 6, 8524. (*Imaging and perturbation strategy to study organelle biology highlighting luminal pH-dependent mTOR signaling and metabolism; Highlighted by Chemistry and Biology*)

Wang Y, Wang C, Huang G, Zhao T, Ma X, Li Y, Wang Z, Gao J. Digitization of Endocytic pH by Multi-colored Hybrid Ultra-pH Sensitive Nanoprobes at Single Organelle Resolution. **Adv. Mater.** 2017, 29, 1603794. (*First demonstration of analog to digital conversion of biological signals by transistor-like barcode sensors at single organelle resolution*)

Wang C, Zhao T, Li Y, Huang G, White MA, Gao J. Investigation of Endosome and Lysosome Biology by Ultra pH-Sensitive Nanoprobes. **Adv. Drug. Deliver. Rev.** 2017, 113, 87-96. (*General review on the use of UPS nanoparticles to image and perturb endosome/lysosome biology*)

Wang C, Niederstrasser H, Li Y, Olswald N, Lin R, Jaramillo J, Douglas P, MacMillan E, Wang Z, Brekken R, Posner BA, MacMillan JB, Hang G, Gao J, White MA. Small-molecule TFEB pathway agonists that ameliorate metabolic syndrome in mice and extend *C. elegans* lifespan. **Nature Commun.**

2018, 8, 2270. *(Nanobuffer-enabled high throughput screening of activators of autophagy and lysosome metabolism with in vivo efficacy in treating fatty liver disease and prolonging life)*

5. Molecular recognition and tissue engineering (PhD and postdoctoral work)

Gao J, Gomez FA, Haerter, R, Whitesides GM. Determination of the Effective Charge of a Protein in Solution by Capillary Electrophoresis. *Proc. Natl. Acad. Sci. USA*, 1994, 91, 12027-12030. *(First experimental method to measure effective charges of proteins in solution)*

Gao J, Mammen M, Whitesides GM. The Use of Protein Charge Ladders to Evaluate Electrostatic Contributions to Biomolecular Recognition. *Science* 1996, 272, 535-537. *(Quantifying role of electrostatics in molecular recognition by protein charge ladders)*

Gao J, Niklason LE, Langer RS. Surface Hydrolysis of Poly(glycolic acid) Meshes Increases the Seeding Density of Vascular Smooth Muscle Cells. *J. Biomed. Mater. Res.* 1998, 42, 417-424. *(Surface engineering of polymer scaffolds for tissue engineering applications)*

Niklason LE, Gao J, Abbott W, Hirschi K, Houser S, Marini R, Langer R. Functional Arteries Grown In Vitro. *Science* 1999, 284, 489-493. *(First arteries grown in a jar, >2,000 citations)*

Grant Awards

As PI or co-PI (Active)

NIH-NCI 1R35 CA294010 9/1/2024-8/31/2031 \$6.8 M Total

Precision Engineering of STING-DC Immunity to Overcome Tumor Immune Evasion

CPRIT RP220150 3/1/2022-2/28/2025 \$1.05 M Total

Turn ON the Antitumor Immunity in Metastatic Cancers

NIH-NCI 1R01 CA289258 2/15/2024-1/31/2029 \$2.0 M Total

Tumor-Activatable Interleukin-2 Superkine Nanoparticle Therapy

As Co-Investigator (Active)

NIH-NCI R01 CA266146 (PI: B Sumer) 12/1/21-11/30/26 \$2.3 M Total

A pH Responsive Transistor-like Nanoprobe for Sensitive Detection of Unknown Primary Cancers of the Head and Neck

Ray Foundation (PI: T Yue) 7/1/24-6/30/27 \$300K Total

Leveraging the Immune System for the Treatment of Metastatic Osteosarcoma

As PI or co-PI (Past)

NIH-NCI U54 CA244719 9/24/2019-8/31/2024 \$5.2 M Total

Nano-Immuno-Oncology Approaches to Overcome Tumor Immune Evasion

NIH-NCI 2R01 CA216839 7/1/2024-6/30/2029 \$2.1 M Total

STING-Activating Synthetic Nanovaccine for HPV-induced Cancers (2% percentile score, relinquished due to R35 funding)

NIH-NCI R01 CA216839	4/1/2018-9/30/2023	\$1.9 M Total
<i>STING-Activating Synthetic Nanovaccine for HPV-induced Cancers</i>		
<i>OncoNanomedicine SRA</i>	12/15/2021-5/15/2023	\$0.8 M Total
<i>Development of pH sensitive nanomedicine for cancer imaging and therapy</i>		
NIH-NCI U01 CA218422	9/30/2017-8/31/2022	\$3.2 M Total
<i>STING-Activating Polymeric Nanovaccines for T Cell Therapy of Melanoma</i>		
NIH-NCI R01 CA211930	7/1/2017-6/30/2022	\$1.9 M Total
<i>pH Transistor Nanoprobes for Detection of Occult Nodal Metastases</i>		
CPRIT RP180343	3/1/2018-8/28/2021	\$886K Total
<i>Turn ON the Tumor Contrast in Lymph Node Metastases for Occult Disease Detection</i>		
NIH-NCI R01 CA192221	7/1/15-6/30/20	\$1.9 M Total
<i>Nanoprobe-enabled Delineation of Tumor Margins for Improved Surgical Therapy</i>		
NIH-NCI P30CA142543	10/1/2017-9/30/2019	\$100 K Total
<i>Pilot grant: Combining Nanovaccine and Radiotherapy for Immunotherapy of HPV-Induced Cancers</i>		
CPRIT RP140140	8/20/2014-2/28/2018	\$900K Total
<i>Turn ON the Tumor Contrast for Surgical Resection of Head and Neck Cancers</i>		
NIH-NCI P50 CA196516	9/1/2017-8/30/2018	\$40 K Total
<i>Pilot grant: PET Acidotic Tracers for Kidney Cancer Imaging</i>		
NIH-NIBIB R01 EB013149	7/1/11-6/30/15	\$1.5 M Total
<i>pH-activatable Micellar Nanoprobes for Cancer Molecular Imaging</i>		
CPRIT RP120897	6/01/2012-5/31/2015	\$1.0 M Total
<i>β-Lapachone Nanotherapeutics for NQO1-Targeted Therapy of Cancer</i>		
CPRIT RP120094	12/01/2011-11/30/2014	\$965 K Total
<i>Turn ON the Tumor Contrast for Surgical Resection of Head and Neck Cancers</i>		
Texas FUSION Fund	1/1/2011-12/31/2012	\$200 K Total
<i>Dual MRI/Fluorescent Nanoprobes for Robotic Surgery of H&N Tumors</i>		
NIH-NCI R01 CA129011	7/9/08-5/31/12	\$1.6 M Total
<i>Ultra-Sensitive MR Probes for Molecular Diagnosis of Lung Cancer</i>		
NIH-NCI R01 CA122994	5/1/07-2/28/12	\$1.5 M Total
<i>Micellar Nanotherapeutics for Targeted Therapy of Lung Cancer</i>		

NIH-NIBIB R21 EB005394 9/1/05-8/31/09 <i>MFe₂O₄-Loaded Polymer Micelles as Ultra-Sensitive MR Molecular Probes</i> Minority supplement to Carlos Barcena 9/1/06-8/31/09	\$1.5 M Total \$151 K Total
Texas Instrument 4/1/2008-3/31/2011 <i>Defined nanoscale Si sensors as cancer diagnostic devices (Co-PI with Dr. W Hu at UTD)</i>	\$500 K Total
Montcrief Foundation 10/1/06-9/30/09 <i>Nanotubular Capsules as Ultrasensitive MR Molecular Probes</i>	\$250 K Total
NIH-NCI R01 CA90696 5/1/02-4/30/07 <i>Interstitial drug delivery to the thermoablated liver tumors</i> Minority supplement to Elvin Blanco 8/1/02-4/30/07	\$1.3 M Total \$192 K Total
Whitaker Foundation 5/1/2000-4/30/2003 <i>Drug delivery system for thermoablated liver tumors</i>	\$210 K Total
NIH-NCI R21 CA093993 2/1/02-1/31/04 <i>Computed Tomography: In vivo measure of platinum-containing drugs</i>	\$383 K Total
<u>As Co-Investigator (Past)</u>	
NIH-NCI R01 CA102792 (PI: DA Boothman) 08/01/03-04/30/18 <i>Use of β-lapachone for non-small cell lung cancer therapy</i>	\$1.8 M Total
DOD (PI: JKW Willson) 9/4/2009-10/03/2011 <i>Nanotechnology for Cellular Therapies (Building of GMP facility)</i>	\$8.6 M Total
NIH-NCI R21 CA132096 (PI: V Kodibagkar) 12/01/08-11/31/10 <i>¹H MRI based nanosensors for imaging tumor oxygenation</i>	\$275 K Total
NIH-NCI U24 CA126608 (PI: R Mason & AD Sherry) 4/1/2007-3/30/2010 <i>Development of multi-chromatic MR agents for cancer diagnosis</i>	\$50 K (DC)
NIH-NCI R21 CA112436 (PI: E Dormindotova) 2/1/06-1/31/09 <i>Design of Targeting Enhancement for Drug Delivery</i>	\$275 K Total
NIH-NCI R01 CA102792 (PI: DA Boothman) 10/01/03-06/30/08 <i>Use of β-lapachone for local delivery lung cancer chemotherapy</i>	\$1.7M Total
NIH-NCI P50 CA070907 (PI: J Minna) 7/1/07-6/30/08 <i>Development of Ultra-Sensitive MR Probes for Early Detection of Lung Cancer</i>	\$25 K (DC)
NIH-NCI P50 CA070907 (PI: J Minna) 2/1/06-1/31/07 <i>Development of Lung Cancer-Targeted Polymer Micelles</i>	\$25 K (DC)

DOD (PI: DA Boothman) 10/1/03-9/30/06 \$573 K Total
Use of β -lapachone-millirods for improved therapy of prostate cancer

Ohio Biomed Res Tech Trust Partnerships (PI: J Nadeau) 6/1/03-6/30/05 \$3.3M Total
Genetics of gastrointestinal cancers (\$3.3 M Total)

Patents (US issuance only)

1. US 6, 537, 567. Tissue-engineered tubular construct having circumferentially oriented smooth muscle cells. Niklason L, Gao J, Langer, RS. (Licensed to Humacyte)
2. US 6, 890, 950. Lapachone delivery systems, compositions and uses related thereto. Gao J, Nasongkla N, Pink J, Boothman DA.
3. US 9, 469, 878. Methods of treating cancer comprising targeting NQO1. Boothman DA, Gao J, Bey E, Dong Y. (Licensed to StemPar Sciences)
4. US 9, 631, 041. pH-sensitive compositions for delivery of beta-lapachone and methods of use. Gao J, Boothman DA, Zhou YJ, Bey E.
5. US 11, 098, 150. Block copolymer and micelle compositions and methods of use thereof. Gao J, Boothman DA, Zhou KJ, Huang XN, Wang YG. (Licensed to OncoNano Medicine)
6. US 11, 447, 593. Block copolymer and micelle compositions and methods of use thereof. Gao J, Boothman DA, Zhou KJ, Huang XN, Wang YG. (Licensed to OncoNano Medicine)
7. US 9, 751, 970. Block copolymer and micelle compositions and methods of use thereof. Gao J, Boothman DA, Zhou KJ, Huang XN, Wang YG. (Licensed to OncoNano Medicine)
8. US 10, 017, 598. Block copolymer and micelle compositions and methods of use thereof. Gao J, Boothman DA, Zhou KJ, Huang XN, Wang YG. (Licensed to OncoNano Medicine)
9. US 9, 511, 152. Multicolored pH-activatable fluorescence nanoplatfom. Gao J, Zhou KJ, Sumer BD. (Licensed to OncoNano Medicine)
10. US 9, 872, 926. Multicolored pH-activatable fluorescence nanoplatfom. Gao J, Zhou KJ, Sumer BD. (Licensed to OncoNano Medicine)
11. US 10, 272, 099. Tumor-selective combination therapy. Hergenrother PJ, Boothman DA, Bair JS, Cao LF, Gao J, Huang XM, Luo XQ, Ma XP, Moore ZR, Parkinson EI. (Licensed to StemPar Sciences)
12. US 10, 576, 096. Tumor-selective combination therapy. Hergenrother PJ, Boothman DA, Bair JS, Cao LF, Gao J, Huang XM, Luo XQ, Ma XP, Moore ZR, Parkinson EI. (Licensed to StemPar Sciences)

13. US 10, 098, 971. Library of pH responsive polymers and nanoprobe thereof. Gao J, Huang G, Zhao T, Ma XP, Wang YG, Li Y, Sumer BD. (Licensed to OncoNano Medicine)
14. US 11, 013, 818. Library of pH responsive polymers and nanoprobe thereof. Gao J, Huang G, Zhao T, Ma XP, Wang YG, Li Y, Sumer BD. (Licensed to OncoNano Medicine)
15. US 11, 723, 990. Library of pH responsive polymers and nanoprobe thereof. Gao J, Huang G, Zhao T, Ma XP, Wang YG, Li Y, Sumer BD. (Licensed to OncoNano Medicine)
16. US 10, 829, 427. Naphthoquinones, pro-drugs, and methods of use thereof. Gao J, Liu YL, Wei Q, Ma XP, Huang G.
17. US 11, 376, 324. STING activating nanovaccine for immunotherapy. Gao J, Chen ZJ, Luo M, Wang ZH, Wang H, Cai HC, Huang G, Fu YX. (Licensed to OncoNano Medicine)
18. US 12, 036, 319. Polyvalent STING activating compositions and uses thereof. Li S, Gao J.

Professional Service

Co-Chair of Cancer and Nanotechnology Forbeck Forum (2024), Pacific Grove, CA

The New Frontiers Program Project Grant review panel (2023), Terry Fox Research Institute, Vancouver, Canada

NIH Institute Director Leadership Review (2023), Center for Scientific Review, NIH

Steering Committee (2019-), Immuno-Oncology Translational Network, National Cancer Institute

Search Committee (2018) for the Director of Center for Scientific Review (CSR), National Institutes of Health

Member (2018-2022) of Advisory Council to the Center for Scientific Review (CSR), National Institutes of Health

Chair of Editorial Panel (2018), Biomedical Technology Research Resource Center (P41), National Institutes of Health

Ad hoc member (2017) *Nano Study Section (NANO)*, National Institutes of Health

Ad hoc member (2005-2011), member (2011-2014) and Chair (2014-2016) of *Gene and Drug Delivery (GDD) Study Section*, National Institutes of Health

External Advisory Board, Purdue University Center of Cancer Research, 2011-2020

Senior Editorial Board, *American Journal of Nuclear Medicine and Molecular Imaging* (ISSN: 2160-8407), 2011-present

Editorial Board, *Theranostics* (ISSN: 1838-7640), Ivyspring International Publishing, 2011-present

Member of Expert Panel on evaluation of Nanotech Institute, Technical University of Denmark, Copenhagen, Denmark, 2015

Associate Editor, *Experimental Biology and Medicine*, 2006-2012

Ad hoc panel member for *R24 Resource-Related Research Project* for NHLBI (2012), *Quantum Grant Study Section*, NIBIB (2007), *NHLBI Program Project Grant Study Section* (2005, 2006), NIH ARRA competitive revision study section (2009).

Ad hoc grant reviewer for *National Science Foundation (NSF)*, *Indiana 21st Century Fund*, *North Carolina Biotechnology Center*, *Academic Research Fund at National University of Singapore*, *Pennsylvania Performance Review of Partnership for Innovation Program*, *NCI SBIR/STTR Study Section*, *Department of Defense Lung Cancer Research Program*.

Session chairs for *Society for Biomaterials* (2001, 2003, 2008), *Controlled Release Society* (2005), *Materials Research Society* (2007).

Program chair, Nanomaterials Special Interest Group. *Society for Biomaterials* (2009-2011)

Chair of Organization Committee, *DFW Nanomedicine Symposium at UT Dallas* (2006)

Member of Working Group for *Cancer Clinical Trials for the Texas Cancer Research Institute, University of Texas System* (2008-2009)

Societies (active & past membership)

American Association for the Advancement in Science, American Chemical Society, Society for Biomaterials, Controlled Release Society, Society for Experimental Biology and Medicine, American Association of Pharmaceutical Scientists, Biomedical Engineering Society

Journal Review

Nature Nanotechnology, Nature Materials, Nature Biomedical Engineering, Nature Communications, Cancer Research, Journal of American Chemical Society, Nano Letters, Angewandte Chemie International Edition, Cancer Chemotherapy and Pharmacology, Journal of Pharmaceutical Sciences, Journal of Controlled Release, Journal of Biomedical Materials Research, Journal of Biomaterials Science (Polymer Edition), Journal of Applied Biomaterials, and Small.

University Service

Member of Faculty Administrative Forum led by Dr. Joan Conaway, Dean of Basic Science (2022-)

Member of Postdoc Recruitment Workgroup led by Dr. Andrew Zinn, Dean of Graduate School (2022)

Member of Internal Review Committee (appointed by Dean Joan Conaway), Pilot Synergy Grants for Collaborative Research (2021)

Member of the UT Southwestern Intellectual Property Advisory Committee chaired by Dr. Andrew Lee, Provost of UT Southwestern (2020-present)

Biomedical Engineering Programming Workshop (Research and Support Space for new building) (2020)

Technology Transfer Optimization Workgroup assembled by Dr. Andrew Lee, Provost of UT Southwestern (2019)

Search Committee (2019-2021) for the Chair of Department of Biomedical Engineering, UT Southwestern Medical Center

Working Group on Bioengineering Collaboration between UTSW and UTD led by Presidents Podolsky and Benson (2017)

Search Committee, Welch Chair of Chemistry, Department of Chemistry, UT Dallas (2017)

CPRIT High Impact/High Risk Internal Grant Review Committee, UT Southwestern Medical Center (2016, 2017)

Regulatory Science Advisor, Center of Translational Research, UT Southwestern Medical Center (2016-2018)

Director, Molecular and Translational Nanomedicine Track, Biomedical Engineering Program, UT Southwestern Medical Center (2016-2021)

Co-Director, Imaging and Cancer Nanomedicine Program, Simmons Comprehensive Cancer Center (2014-present)

Chair of Search Committee, Assistant Professor in Cancer Nanomedicine, Simmons Comprehensive Cancer Center, UT Southwestern Medical Center (2008-2012)

Co-Organizing (with Prof. Moon Kim at UT Dallas) joint iNanomed Seminar Series (2008-2009)

Member of Steering Committee and Search Committee for Department Chair for Bioengineering, EJS School of Engineering, UT Dallas (2005-2007)

Member of Committee of Chemistry of Materials, Dean's Advisory Group on Recruitment (DAGOR), Committee of Research, Executive Committee, Strategic Planning Committee, Case School of Engineering, Case Western Reserve University (2001-2005)

Member of Search Committees for tenure-track faculty in Chemistry, Chemical Engineering, and Biomedical Engineering, Case Western Reserve University (2000-2005)

Member of Undergraduate Education Committee, Graduate Education Committee, BME major advisor, BME freshmen advisor, Department of Biomedical Engineering, Case Western Reserve University (1999-2005)

Advisee Fellowships/Competitive Awards

May Kay International Postdoctoral Fellowship (Q Wang) Hypoxia-activatable STING agonist to augment antitumor immunity (10/1/23-9/30-25)	\$120,000
NIH Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (F31) (Z Bennett) (2/1/2021-1/31/2024)	\$180,757
DOD Postdoc Fellowship (C Khemtong) (9/15/06-8/14/09) <i>Ultrasensitive MR probes for early breast cancer detection</i>	\$430,000
Susan G. Koman Breast Cancer Postdoc Fellowship (CF Zhang) (7/1/07-6/30/10) <i>Ultrasensitive MR probes for early breast cancer detection</i>	\$135,000
DOD Predoctoral Fellowship (B Weinberg) (7/1/05-6/30/08) <i>Multimodality CT/SPECT Evaluation of Micelle Drug Carriers for Treatment of Breast Tumors</i>	\$90,000
DOD Postdoc Fellowship (SF Chin) (10/1/04-4/30/07) <i>Combined Radiation and β-Lapachone Millirod Therapy for Prostate Tumors</i>	\$125,000

Current Advisees and Staff

Research staff:

Gang Huang (PhD in Analytical Chem., Univ. North Texas), Research Associate Professor,
U54 Center Administrative Director
Raymundo Pantoja, Lab Manager (BS in Chemistry, Columbia University)
Katy Torres, Research Assistant I
Oreoluwa Onabolu (BS/MS, Georgetown University), Research Assistant II
Jacqueline Gonzalez Lopez, Research Technician II (BS in Biology, Univ. North Texas)

PhD students:

Maggie Wang (BS/MS, West Washington Univ., 2020), Biomedical Engineering Program
Anthony Grichuk (BS, University of Houston, 2023), Cancer Biology Program
Animesha Krishnamurphy (BS, Case Western Reserve Univ. 2023), BME Program

Postdoctoral fellows:

Qiang Feng (2017-, PhD in Nanoscience, Natl Center of Nanotechnology China)
Zhichen Sun (2019-, PhD in immunology, Institute of Biophysics, Chinese National Academy of Sciences; co-advising with Prof. Yang-xin Fu)
Shuyue Ye (2022-, PhD in Medicine, Soochow University, China)
Shuang Chen (2022-, PhD in Analytical Chemistry, Anhui University, jointly trained at Georgia State University)
Quan Wang (2023-, PhD in Biomedical Engineering, Shanghai Jiao Tong University, China)
Xuechun Wang (July 2024-, PhD in Bioinformatics, Tongji Medical Institute, China)

Yangyang Zhao (July 2024-, PhD in Nanomedicine, Univ. Sci. Tech. China)

Past PhD Advisees with Placement (15 in total, in chronological order)

Agata Exner (1998-2002), PhD in Biomedical Engineering, Case Western Reserve Univ.

Thesis '*Non-invasive monitoring and evaluation of local drug delivery in livers following radiofrequency ablation*'; Professor and Vice Chair of Radiology, Case Western Reserve Univ., Cleveland, OH

Feng Qian (1998-2003), PhD in Biomedical Engineering, Case Western Reserve Univ.

Thesis '*Combined modeling and experimental approaches for the rational design of intratumoral drug delivery systems*'; Professor and Dean of School of Pharmaceutics, Tsinghua Univ., Beijing, China

Norased Nasongkla (2000-2006), PhD in Macromolecular Sci and Eng, Case Western Reserve Univ.

Thesis '*Multifunctional Polymeric Micelles as Cancer-Targeted, Ultrasensitive Imaging Probes and Drug Delivery Systems*'; Professor and Chair of Dept. Biomed Eng, Mahidol University, Bangkok, Thailand

Damon Sutton (2001-2007), PhD in Macromolecular Sci and Eng, Case Western Reserve Univ.

Thesis '*pH-Response Drug Delivery Systems*'; Senior Chemist at Medtronic Diabetes, Los Angeles, CA

Brent Weinberg (2003-2007), PhD in Biomedical Engineering, Case Western Reserve Univ.

Thesis '*Intratumoral chemotherapy for liver cancer using biodegradable polymer implants*'; Assistant Professor of Neuroradiology, Emory Univ., Atlanta, GA

Elvin Blanco (2002-2008), PhD in Biomedical Engineering, UT Southwestern Med. Center

Thesis ' *β -Lapachone Nanotherapeutics for Lung Cancer Therapy*'; Assistant Research Professor, Houston Methodist, Houston, TX

Carlos Barcena (2006-2008), PhD in Chemistry, UT Dallas

Thesis '*Novel superparamagnetic nanoparticles as MRI contrast agents*'; Examiner, US Patent and Trademark Office, Washington, DC

Tao Li (2005-2010), PhD in Electrical Eng, co-advising with Prof. W Hu, UT Dallas

Thesis '*Lithographically Defined Shape-Specific Polymeric Particulates for Nanomedicine Applications*'; Professor of EE, Southeast Univ., Nanjing, China

Chase Kessinger (2005-2010), PhD in Cancer Biology, UT Southwestern Med. Center

Thesis ' *$\alpha_v\beta_3$ -Targeted Nanoprobes for In Vivo Imaging of Tumor Angiogenesis*'
Postdoc with Dr. FA Jaffer at Harvard Med School; Instructor, Cardiovascular Res Center, Mass General Hospital, Boston, MA

Tian Zhao (2011-2015), PhD in Chemistry, UT Southwestern Med. Center

Thesis '*pH Transistor Nanoprobe Advance Cancer Detection and Surgery*'; Vice President of R&D, OncoNano Medicine, Inc., Dallas, TX

Chensu Wang (2011-2017), PhD in Biomed Eng, UT Southwestern Med. Center
Thesis '*illuminating Endocytic Organelles with pH Responsive Nanomaterials*'; HHMI Pre-doctoral fellow; Postdoctoral fellow with Dr. Darrell Irvine, MIT; Research Scientist at Pfizer Oncology, San Diego

Yang Li (2011-2017), PhD in Chemistry, UT Southwestern Med. Center
Thesis '*Molecular Basis of Cooperativity in pH-Triggered Supramolecular Self-Assembly*'; Postdoctoral fellow with Dan Kohane and Instructor, Harvard Medical School/Boston Children's Hospital; Research Scientist, FDA

Jonathan Wilhelm (2017-2022) PhD in Biomedical Engineering, UT Southwestern Med. Center
Thesis '*Cooperativity-Physiologic Cornerstone and Emerging Therapeutic Design Principle*'
Associate Clinical Trial Manager at Medpace, Arlington, TX

Jiwon Song (2017-2022) PhD in Biomedical Engineering, UT Southwestern Med. Center
Thesis '*Investigation of Divergent Metabolic Programs in the Tumor-Immune Microenvironment*', Associate, McKinsey and Company, New York City

Zachary Bennet (2017-2024), PhD in Biomedical Engineering, UT Southwestern Med. Center
Thesis '*An Ultra-pH Sensitive Logic Decodes Cancer Imaging and Immunotherapy*', Postdoctoral fellow, Rice University, Houston, TX

Past Postdoctoral Advisees with Placement (31 in total, in chronological order)

Hua Ai (PhD in Chem. U Louisiana) (CWRU BME, 2002-2005, DOD Postdoc fellowship), Professor at National Engineering Res Center for Biomaterials, SiChuan University, Chengdu, China

Xintao Shuai (PhD in Polymer Chem. Inst. Chem. Chinese Academy of Sci.) (CWRU BME, 2003-2005), Professor and Director of Biomedical Engineering Center, Zhongshan Univ., Guangzhou, China

Chalermchai Khemtong (PhD in Chem. U Akron) (UT Southwestern, 2005-2010), Assistant Professor in Advanced Imaging Research Center, UT Southwestern, Dallas, TX

Shook-Fong Chin (PhD in Chem. UT Dallas) (UT Southwestern, 2005-2007), Research Scientist at Impax Labs, Hayward, CA

Fatih Buyukserin (PhD in Chem. Univ. Florida) (UT Dallas, 2007-2008), Associate Professor of Biomed Eng., TOBB Univ., Ankara, Turkey

Jagadeesh Setti-Guthi (PhD in Chem. IIT) (UT Southwestern, 2006-2009), Principal Scientist at Active Pharmaceutical Intermediates, Hyderabad, India

Su-Geun Yang (PhD in Pharmaceutics, Natl Seoul Univ.) (UT Southwestern, 2006-2009), Associate Professor of Pharmaceutics, Inha Univ., Seoul, Korea

Amandeep Sra (PhD in Chem. Texas A&M) (UT Southwestern, 2007-2009), Associate Faculty at Colin College, Frisco, TX

Chunfu Zhang (PhD in Chem.) (UT Southwestern, 2007-2008), Associate Professor in Med-X Res Inst. of Shanghai Jiao Tong Univ., Shanghai, China

Gang Huang (PhD in Chem. U North Texas) (UT Southwestern, 2007-2010), Instructor at Simmons Comprehensive Cancer Center, UT Southwestern, Dallas, TX

Huabing Chen (PhD in Pharmaceutics, HUST) (UT Southwestern, 2008-2010), Professor of Pharmaceutics, SuZhou Univ., SuZhou, China; Outstanding Young Investigator Award in China

Haijun Yu (PhD in Chem. Chinese Acad Sci) (UT Southwestern, 2009-2011), Associate Professor in Shanghai Inst. Mater Med., Shanghai, China; Outstanding Young Investigator Award in China

Huiying Ding (PhD in Tech Inst of Chem Phys, CAS) (UT Southwestern, 2009-2011), Editor in Beijing Science Publishing Group

Yinjian Zhou (PhD in Chem. Chinese Acad Sci) (UT Southwestern, 2009-2011), Assistant Professor, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China

Xiaonan Huang (PhD in Chem. Peking Univ.) (UT Southwestern, 2009-2011), Associate Professor of Chemistry, Capital Normal Univ. Beijing, China

Kejin Zhou (PhD in Chem. U Sci Tech China) (UT Southwestern, 2010-2013), Instructor in Simmons Comprehensive Cancer Center, UT Southwestern, Dallas, TX

Xinpeng Ma (PhD in Chem., U Wyoming) (UT Southwestern, 2009-2013), Research Scientist at Moderna Therapeutics, Boston, MA

Yiguang Wang (PhD in Pharmaceutics, Peking Univ.) (UT Southwestern, 2010-2015), Professor and Chair of Department of Pharmaceutics, Peking Univ., Beijing, China

Zhiqiang Lin (PhD in Pharmaceutics, Peking Univ.) (UT Southwestern, 2014-2016), Assistant Professor in School of Medicine, Peking Univ., Beijing, China

Min Luo (PhD in Mol. Biol. Peking Univ.) (UT Southwestern, 2013-2018), Associate Professor in School of Medicine, Fudan Univ., Shanghai, China

Tongyi Huang (2018-2020, MD/PhD in radiology, Sun Yat-sen University; fellowships from SYSU), Assistant Professor of Radiology, Sun Yat-sen University, Guang Zhou, China

Kai Li (2019-2020, PhD in Pharmacy at Peking Univ.), Research Manager, CR Pharmaceutical Group, Shenzhen, China

Zhaohui Wang (2013-2020, PhD in Pharmacy at Peking Univ.), Assistant Professor, Xiehe Institute of Materia Medica, Chinese Academy of Medical Sciences, Beijing, China

Xu Wang (2017-2020, PhD in Polymer Chemistry, Univ. Sci. Tech. China), Postdoc fellow, UT Southwestern Medical Center, Dallas, Texas

Zhida Liu (2018-2020, PhD in Immunology, co-advising with Prof. Yang-xin Fu), Assistant Professor, Shanxi University, Taiyuan, China

Suxin Li (2019-2021, PhD in Pharmacy at Peking Univ.), Assistant Professor, Department of Pharmaceutics, Chinese Pharmaceutical University, Nanjing, China

Jian Wang (2019-2021, PhD in Immunology, Peking Union Medical College; fellowships from China Education Ministry), Assistant Professor, Department of Immunology, Tianjin Medical University Cancer Institute and Hospital, National Clinical Research Center for Cancer, Tianjin, China

Xuexin Yu (2019-2022, PhD in Genomics and Bioinformatics, Beijing Institute of Genomics, Chinese Academy of Sciences), co-advising with Prof. Bo Li

Wei Li (2018-2022, PhD in Pharmacy, Zhejiang Univ.), Scientist II in Tome Bioscience, Boston, Massachusetts

Jiahui Chen (2019-2022, PhD in Molecular Biology, Chinese Academy of Sciences), Scientist at Legend Bioscience, Nanjing, China

MS Students

Yen-Chiat Chow (BME, CWRU), Nancy Prasert (Macro Sci Eng, CWRU), Andy Wiedmann (BME, CWRU), Amol Sharma (BME, CWRU), Vonya Miksic (BME, CWRU)

Undergraduate and Medical Students

Amol Sharma (CWRU BME), Judy Jin (CWRU BME), Tina Kinscher (CWRU BME), Diana Wey (CWRU BME), Lauren Sample (CWRU BME), Elizabeth Tse (CWRU BME), Vipul Sheth (CWRU BME), Srinivasan Gutti (CWRU BME), Ben Tomlinson (CWRU BME), Pooja Ghatalia (CWRU Chem), Fern Yoon (UTD EE), Sussana Elkassih (UTD Chem), Nigel Gwini (UNW Chem), Joel Sun (UTSW Med), Sina Khorsandi (UTD Chem), Bilal Khurshid (UTA BME), Elva Ye (UTA Chem), Manuel Perez (Univ. Puerto Rico Chem), Hamed Elfeky (Case Western Reserve Univ.)

High School Summer Interns

Alyssa Chen and Shriya Das (2013-2014 National Finalist, Siemens Competition), Aila Sumer (2022, admission to MIT), Michael Gao and Joseph Sun (2023)

Student Awards

Summer, 1999 Whitaker summer undergraduate research fellowships to Judy Jin and Tina Kinscher

Feb., 2000 Agata Szymanski received a student award at MS level at BME research day, CWRU.

Summer, 2000 Whitaker summer undergraduate research fellowship to Diana Wey

Sept. 2000 Norased Nasongkla received the Royal Thai Government Predoctoral Scholarship

Summer, 2001 Whitaker summer undergraduate research fellowship to Lauren Sample and Elizabeth Tse

April, 2002 Agata Szymanski-Exner is awarded a Student Travel and Professional Development Award from the Society for Biomaterials

May, 2002 Damon Sutton has received a Graduate Dean's Instructional Excellence Award

Summer, 2002 Whitaker summer undergraduate research fellowship to Vipul Sheth and Vasu Gutti

Sept., 2002 Agata Szymanski-Exner has received a scholarship from the New Jersey Center for Biomaterials to attend the 6th NJ Symposium on Biomaterials Science in Somerset, New Jersey.

2000-2002 Whitaker Foundation predoctoral traineeship to Agata Szymanski-Exner

2002-2006 Minority supplement support for Elvin Blanco from the National Institutes of Health

Summer, 2003 Whitaker summer undergraduate research fellowship to Ben Tomlinson

Oct., 2003 Brent Weinberg has received a student travel award to attend the 2003 BMES conference

Nov. 2004 Dr. Hua Ai has received a postdoctoral fellowship from the DOD Prostate Cancer Program

2003-2004 NIH predoctoral traineeship to Brent Weinberg from BME, CWRU

Jan. 2005 Brent Weinberg has received a predoctoral fellowship from the DOD Breast Cancer Program

Aug. 2006 Dr. Charlie Khemtong received DOD multi-disciplinary postdoctoral fellowships

Aug. 2006 Dr. Su-Geun Yang received a one-year postdoctoral fellowship from the Korean Government

June 2007 Green Fellowship to Pooja Ghatalia, a junior undergraduate student from UT Dallas

Jan. 2007 Fern Yoon from UT Dallas received a Green Fellowship

March 2007 Carlos Barcena received a second prize in UTD Chemistry and Biological Science Symposium

May 2007 Dr. Chunfu Zhang received a postdoc fellowship from the Susan G Komen Breast Cancer Foundation

Nov. 2007 Dr. Charlie Khemtong received a 5th Annual Postdoctoral Symposium Award at UT Southwestern Medical Center

Sept. 2008 Elvin Blanco, a graduate student, received a travel award to the Society for Biomaterials Meeting, Atlanta, GA

2010 Chase Kessinger received Society of Experimental Biology and Medicine best paper award in Alan

April 2013 Joel Sun is honored in the 51st Annual Medical Student Research Forum at UT Southwestern

April 2014 Alyssa Chen and Shriya Das are National Finalist at Siemens Competition

2015 Youth 1000 plan to Yiguang Wang, Chinese Ministry of Organization

2014-2017 HHMI pre-doctoral fellowship to Chensu Wang (BME student)

2018 Youth 1000 plan to Min Luo, Chinese Ministry of Organization

2018 Clinical oversea fellowship to Dr. Tongyi Huang by Sun Yat-Sen University, Guangzhou, China

2018 Chinese Government Scholarship to Dr. Jian Wang

2018 Outstanding Poster Presentation Award to Jonathan Wilhelm, NCI Alliance for Nanotechnology, Washington, DC

2020 Carol and Robert Eberhart Endowed Scholarship in Engineering in the Clinical Sciences to Jonathan Wilhelm

2021 National Institutes of Health Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (F31) to Zachary Bennett

2022 Dr. Feng Qiang received a travel award from the Society of Immunotherapy of Cancer in Boston, MA

2023 Hamed Elfeky received Amgen Undergraduate Research Fellowship for summer internship

2023 Dr. Quan Wang received May Kay International Postdoctoral Fellowship

2024 Maggie Wang received the 2024 Carol and Robert Eberhart Endowed Scholarship Award in Engineering and Clinical Sciences, UT Southwestern

2024 Maggie Wang received the 2024 Ida M. Green Award for scholastic excellence and outstanding citizenship, Graduate School of Biomedical Sciences, UT Southwestern

Teaching

91-92 Teaching Fellow, Harvard University

98	<i>Intro to Biomaterials</i> , BME core course, Case Western Reserve Univ.
99	<i>Structure of Biol Materials</i> , BME elective course, Case Western Reserve Univ.
99-05	<i>BME lab</i> , BME, Case Western Reserve Univ.
99-05	Designed and taught <i>Biomaterials and Drug Delivery</i> , BME, Case Western Reserve Univ.
00-05	<i>Intro to BME</i> (freshmen course, Biomaterials/Tissue Engineering section), BME, Case Western Reserve Univ.
02-05	Designed and taught <i>Quantitative Molecular Bioengineering</i> (capstone UG course to Biomaterials Tissue Engineering Track), Case Western Reserve Univ.
03-04	<i>Materials and Manufacturing Processes</i> (Pharmaceutical materials section), Case School of Engineering and School of Management
06-09	<i>Cancer Biology</i> (Nanomed lectures), UT Southwestern
06-10	<i>Mechanism of Drug Action</i> (Nanomed lectures), UT Southwestern
18-present	<i>Molecular and Translational Nanomedicine</i> , UT Southwestern

Selected Media Coverage

March, 2024 - Nanoparticles developed at UTSW effectively fight tumors:

University News, <https://www.utsouthwestern.edu/newsroom/articles/year-2024/march-nanoparticles-fight-tumors.html>

December, 2023 - Jinming Gao named fellow of the National Academy of Inventors:

University News, <https://www.utsouthwestern.edu/newsroom/articles/year-2023/dec-gao-fellow-national-academy-inventors.html>

Fall, 2023 – Fluorescent Nanoprobe Produces “Breakthrough” for Peritoneal Metastasis:

Cancer Answers @ Simmons, UT Southwestern Simmons Cancer Center quarterly report, fall 2023

July 13, 2023 – Fluorescent nanoprobe lights the way to reducing spread of cancer cells:

UT Southwestern MedBlog, <https://utswmed.org/medblog/fluorescent-nanoprobe-cancer/>

Spring, 2023 – Targeting Lactate Metabolism for Cancer Immunotherapy:

Cancer Answers @ Simmons, UT Southwestern Simmons Cancer Center quarterly report, Spring 2023

Sept. 6, 2022 – Publications 143, Lactate rejuvenate T cell immunity:

MedicalXpress: Cellular ‘waste product’ rejuvenates cancer-fighting immune cells
(<https://medicalxpress.com/news/2022-09-cellular-product-rejuvenates-cancer-fighting-immune.html>)

Also covered by *Today UK News*, *The Medical News*, *Technology Networks*, *GEN*, *Science Daily*, *News Azi*, *Front Line Genomics* (>20 news outlet). Altmetric score of 256, ranked in the 99% of >240,000 tracked articles of a similar age in all journals. Interview by Sam Baker at KERA Public Radio.

April 10, 2022 – StatNews: Lighting up cancer cells with pH-activated nanoparticles by Angus Chen. News report following a presentation at the annual meeting of American Association of Cancer Research in New Orleans, LA.

June 22, 2021 – BioWorld Financial Watch: OncoNano Medicine Lands \$50M in Series B to Spur Nanosensor that “Lights up” Cancer

June 17, 2021 – Dallas Innovates: Southlake Biotech OncoNano Medicine Raises \$50M in Series B to Accelerate Cancer Tech Toward Commercialization

Both news cited UT Southwestern as the source of the invention and intellectual property for the platform technology in pharmaceutical development

Feb. 8, 2021 – Publication #138, Dual STING-targeted nanotherapeutics:

EurekAlert: STINGing Tumors with Nanoparticles

(https://www.eurekalert.org/pub_releases/2021-02/usmc-stw020821.php)

Also covered by Scitech Daily, Bioengineer, ScienMag, Grey Horizon, MedicalXpress, Sciencenewsnet, etc. (>20 media outlets)

April 24, 2017 – Publication #124, STING-activating nanovaccine:

Nature Nanotech: Cancer immunotherapy: Making allies of phagocytes by Steven Fiering

(<http://www.nature.com/nnano/journal/vaop/ncurrent/full/nnano.2017.89.html>)

Science Newline: Nanoparticle Vaccine Shows Potential to Fight Multiple Cancer Types

(<http://www.sciencenewline.com/news/2017042513450081.html>)

Bioscience Technology: Nanoparticle Vaccine Immunotherapy Targets Several Cancers

(<https://www.biosciencetechnology.com/news/2017/04/nanoparticle-vaccine-immunotherapy-targets-several-cancers>)

Also covered by Nanowerk, Health Medicinet, Newswise, EurekAlert!, Medical News Today, Scicasts, Phys.org, etc. (>20 media outlets)

December 19, 2016 – Publication #119, Nanotransistor-guided cancer surgery:

Nature BME: Image-guided surgery: Transistor-like pH nanoprobe by NS van den Berg & EL

Rosenthal (<http://www.nature.com/articles/s41551-016-0018>)

Breitbart News: Probes help surgeons detect cancer cells

(<http://www.breitbart.com/news/probes-help-surgeons-detect-cancer-cells/>)

Dallas Morning News: UT Southwestern researchers seek to light up cancer cells so surgeons can better see where to cut by Sabriya Rice

Also covered by Yahoo!News, MedicaXpress, Phys.org, Health24, Breitbart News Network, Medindia, Technology.org, Health Medicinet, etc. (>20 media outlets)

December 8, 2013 – Publication #105, Non-linear amplification of tumor signals:

Science-Business Exchange: Light it up by Tracey Baas

(<http://www.nature.com/scibx/journal/v7/n1/full/scibx.2014.1.html>)

Nature Materials: Cancer imaging: Lighting up tumors by D Ling, MJ Hackett & T Hyeon

(<http://www.nature.com/nmat/journal/v13/n2/full/nmat3860.html>)

Chemistry World: Brighter future for cancer detection with polymer probe by Tim Wogan

(<https://www.chemistryworld.com/news/brighter-future-for-cancer-detection-with-polymer-probe-/6886.article>)

November 29, 2010 – USAMRMC Support of GMP facility for nanomedicine:

The Mercury: The Smallest Solution to Large Problems by Barb Ruppert

(http://mrmc.amedd.army.mil/index.cfm?pageid=media_resources.articles.the_smallest_solution)

October 31, 2006 – Publication # 49, Multifunctional Polymer Micelles:

MIT Technology Review: Nanotech Triple Threat to Cancer: New Technology Finds, Flags, and Kills Tumor Cells by Susan Nasr; (<https://www.technologyreview.com/s/406753/nanotech-triple-threat-to-cancer/>)

April, 2004 – Polymer implants for drug delivery:

Case Magazine Special Issue: The Value of Research: Polymer Drug-Delivery Device Target Tumors

June 22, 2002 – Millirod implants for local cancer therapy:

The Plain Dealer: Scientists Streamline Cancer Treatment by Roger Mezger

Bibliography (in chronological order)

1. Zhao, B.; Xu, X.; Ma, H.; **Gao, J.**; Wang, R.; Sun, D.; Tang, Y. A New Way to Prepare Catalysts on Solid Support with Highly Specific Surfaces. *Acta Phys.-Chim. Sinica*, **1993**, *9*, 8-14.
2. **Gao, J.**; Haerter, R.; Gordon, D.; Whitesides, G. M. Synthesis of KDO Using Indium-Mediated Allylation of 2,3:4,5-Di-O-isopropylidene-D-arabinose in Aqueous Media. *J. Org. Chem.* **1994**, *59*, 3714-3715.
3. **Gao, J.**; Gomez, F. A.; Haerter, R.; Whitesides, G. M. Determination of the Effective Charge of a Protein in Solution by Capillary Electrophoresis. *Proc. Natl. Acad. Sci. USA*, **1994**, *91*, 12027-12030.
4. Zhao, B.; Xu, X.; **Gao, J.**; Ma, H.; Tang, Y. The Effect of the Preparation Method on the Structure of WO₃/ZrO₂. *Acta Phys.-Chim. Sinica*, **1995**, *11*, 982-986.
5. **Gao, J.**; Qiao, S.; Whitesides, G. M. Increasing Binding Constants of Ligands to Carbonic Anhydrase by Using "Greasy Tails." *J. Med. Chem.* **1995**, *38*, 2292-2301.
6. Cheng, X.; Chen, R.; Bruce, J. E.; Schwartz, B. L.; Anderson, G. A.; Hofstadler, S. A.; Gale, D. C.; Smith, R. D.; **Gao, J.**; Sigal, G. B.; Mammen, M.; Whitesides, G. M. Using Electrospray Ionization FTICR Mass Spectrometry to Study Competitive Binding of Inhibitors to Carbonic Anhydrase. *J. Am. Chem. Soc.* **1995**, *117*, 8859-8860.
7. **Gao, J.**; Mrksich, M.; Gomez, F. A.; Whitesides, G. M. Using Capillary Electrophoresis to Follow the Acetylation of the Amino Groups of Insulin and to Estimate their Basicities. *Anal. Chem.* **1995**, *67*, 3093-3100.
8. Chu, Y.-H.; Avila, L. Z.; **Gao, J.**; Whitesides, G. M. Affinity Capillary Electrophoresis. *Acc. Chem. Res.* **1995**, *28*, 461-468.
9. Zhao, B.; Xu, X.; **Gao, J.**; Fu, Q.; Tang, Y.Q. Structure Characterization of WO₃/ZrO₂ Catalysts by Raman Spectroscopy. *J. Raman Spect.* **1996**, *27*, 549-554.
10. **Gao, J.**; Mammen, M.; Whitesides, G. M. The Use of Protein Charge Ladders to Evaluate Electrostatic Contributions to Biomolecular Recognition. *Science* **1996**, *272*, 535-537.
11. **Gao, J.**; Cheng, X.; Chen, R.; Sigal, G. B.; Bruce, J. E.; Schwartz, B. L.; Hofstadler, S. A.; Anderson, G. A.; Smith, R. D.; Whitesides, G. M. Screening Derivatized Peptide Libraries for Tight Binding Inhibitors to Carbonic Anhydrase II by Electrospray Ionization-Mass Spectrometry. *J. Med. Chem.* **1996**, *39*, 1949-1955.
12. **Gao, J.**; Martichonok, V.; Whitesides, G. M. Synthesis of a Phosphonate Analog of Sialic Acid (Neu5Ac) Using Indium-Mediated Allylation of Unprotected Carbohydrates in Aqueous Media. *J. Org. Chem.* **1996**, *61*, 9538-9540.

13. Wu, Q.; **Gao, J.**; Joseph-McCarthy, D.; Sigal, G. B.; Bruce, J. E.; Whitesides, G. M.; Smith, R. D. Carbonic Anhydrase-Inhibitor Binding: From Solution to the Gas Phase. *J. Am. Chem. Soc.* **1997**, *119*, 1157-1158.
14. **Gao, J.**; Whitesides, G. M. Using Protein Charge Ladders to Determine the Values of Effective Charge and Molecular Weight of Proteins. *Anal. Chem.* **1997**, *69*, 575-580.
15. Córdova, E.; **Gao, J.**; Whitesides, G. M. Non-Covalent Polycationic Coatings for Capillaries in Capillary Electrophoresis of Proteins. *Anal. Chem.* **1997**, *69*, 1370-1379.
16. Colton, I.; Anderson, J.; **Gao, J.**; Chapman, R.; Isaacs, L.; Whitesides, G. M. Formation of Protein Charge Ladders by Acylation of Amino Groups on Proteins. *J. Am. Chem. Soc.* **1997**, *119*, 12701-12709.
17. **Gao, J.**; Niklason, L.; Zhao, X.; Langer, R. S. Surface Modification of Polyanhydride Microspheres. *J. Pharm. Sci.* **1998**, *87*, 246-248.
18. Carbeck, J.; Colton, I.; **Gao, J.**; Whitesides, G. M. Protein Charge Ladders, Capillary Electrophoresis, and the Role of Electrostatics in Biomolecular Recognition. *Acc. Chem. Res.* **1998**, *31*, 343-350.
19. **Gao, J.**; Niklason, L.; Langer, R. S. Surface Hydrolysis of Poly(glycolic acid) Meshes Increases the Seeding Density of Vascular Smooth Muscle Cells. *J. Biomed. Mater. Res.* **1998**, *42*, 417-424.
20. Niklason, L.; **Gao, J.**; Abbott, W.; Hirschi, K.; Houser, S.; Marini, R.; Langer, R. Functional Arteries Grown In Vitro. *Science* **1999**, *284*, 489-493.
21. Carbeck, J.; Severs, J.; **Gao, J.**; Wu, Q.; Smith, R. D.; Whitesides, G. M. Correlation between the Charge of Proteins in Solution and in the Gas Phase Investigated by Protein Charge Ladders, Capillary Electrophoresis, and Electrospray Ionization Mass Spectrometry. *J. Phys. Chem. B* **1999**, *102*, 10596-10601.
22. **Gao, J.**; Wu, Q.; Carbeck, J.; Lei, Q. P.; Smith, R. D.; Whitesides, G. M. Probing the Energetics of Dissociation of Carbonic Anhydrase-Ligand Complexes in the Gas Phase. *Biophys J.* **1999**, *76*, 3253-3260.
23. Niklason, L.E.; Abbott, W.; **Gao, J.**; Klagges, B.; Hirschi, K.K.; Ulubayram, K.; Conroy, N.; Jones, R.; Vasanawala, A.; Sanzgiri, S.; Langer, R. Morphologic and Mechanical Characteristics of Engineered Bovine Arteries. *J. Vas. Surg.* **2001**, *33*, 628-638.
24. Qian, F.; Szymanski, A.; Gao, J. Fabrication and Characterization of Controlled Release Poly(D, L-Lactide-co-Glycolide) Millirods. *J. Biomed. Mat. Res.* **2001**, *55*, 512-522.
25. Qian, F.; Nasongkla, N.; **Gao, J.** Membrane-encased Polymer Millirods for Sustained Release of 5-Fluorouracil. *J. Biomed. Mat. Res.* **2002**, *61*, 203-211.
26. **Gao, J.**; Qian, F.; Szymanski-Exner, A.; Stowe, N.; Haaga, J. *In Vivo* Drug Distribution Dynamics in Thermoablated and Normal Rabbit Livers from Biodegradable Polymers. *J. Biomed. Mat. Res.* **2002**, *62*, 308-314.
27. Szymanski-Exner, A.; Stowe, N.; Lazebnik, R.; Salem, K.; Wilson, D.; Haaga, J.; **Gao, J.** Noninvasive Monitoring of Local Drug Release in A Rabbit Radiofrequency (RF) Ablation Model Using X-Ray Computed Tomography. *J. Controlled Release* **2002**, *83*, 415-425.

28. Qian, F.; Saidel, G.; Sutton, D.; Szymanski, A.; **Gao, J.** Combined Modeling and Experimental Approach for The Development of Dual-Release Polymer Millirods. *J. Controlled Release* **2002**, *83*, 427-435.
29. Salem, K.; Szymanski-Exner, A.; Lazebnik, R.; Breen, M.; **Gao, J.**; Wilson, D. X-Ray Computed Tomography Methods for In Vivo Evaluation of Local Drug Release Systems. *IEEE-Trans. Med. Imaging*, **2002**, *21*, 1310-1316.
30. Szymanski-Exner, A.; Stowe, N.; Lazebnik, R.; Salem, K.; Haaga, J.; Wilson, D.; **Gao, J.** Noninvasive Monitoring of Local Drug Release Using X-Ray Computed Tomography: Optimization and *In Vitro/In Vivo* Validation. *J. Pharm. Sci.* **2003**, *92*, 289-296.
31. Qian, F.; Stowe, N.; Liu, E.H.; Saidel, G.M.; **Gao, J.** Quantification of In Vivo Doxorubicin Transport from PLGA Millirods in Thermoablated Rat Livers. *J. Controlled Release*, **2003**, *91*, 157-166.
32. Nasonkla, N.; Wiedmann, A.; Bruening, A.; Beman, M.; Ray, D.; Bornmann, W.G.; Boothman, D.; **Gao, J.** Enhancement of Solubility and Bioavailability of β -Lapachone using Cyclodextrin Inclusion Complexes. *Pharm. Res.* **2003**, *20*, 1626-1633.
33. Szymanski-Exner, A.; Gallacher, A.; Stowe, N.; Weinberg, B.; Haaga, J.; **Gao, J.** Local Carboplatin Delivery and Tissue Distribution in Livers Following Radiofrequency (RF) Ablation. *J. Biomed. Mat. Res.* **2003**, *67*, 510-516.
34. Ai, H.; **Gao, J.** Size-Controlled Polyelectrolyte Nanocapsules via Layer-by-Layer Self-Assembly. *J. Mater. Sci.* **2004**, *39*, 1429-1432.
35. Qian, F.; Stowe, N.; Saidel, G.M.; **Gao, J.** Pharmacokinetic Comparison of Sustained and Dual-Release Polymer Millirods in RF Ablated Livers. *Pharm. Res.* **2004**, *21*, 394-399.
36. Blanco, E., Qian, F., Weinberg, B., Stowe, N., Anderson, J.M., **Gao, J.** Effect of Fibrous Capsule Formation on Doxorubicin Distribution in Radiofrequency Ablated Rat Livers. *J. Biomed. Mat. Res.* **2004**, *69*, 398-406.
37. Shuai, X.T.; Ai, H.; Nasongkla, N.; Kim, S.; **Gao, J.** Micellar Carriers Based on Block Copolymers of Poly(ϵ -caprolactone) and Poly(ethylene glycol) for Doxorubicin Delivery. *J. Controlled Release.* **2004**, *98*, 415-426.
38. Nasongkla, N.; Shuai, X.; Ai, H.; Weinberg, B.D.; Pink, J.; Boothman, D.A.; **Gao, J.** cRGD-Functionalized Polymer Micelles for Targeted Doxorubicin Delivery. *Angew. Chem. Int. Ed.* **2004**, *43*, 6323-6327.
39. Szymanski-Exner, A., Weinberg, B., Stowe, N., Gallacher, A., Wilson, D., Haaga, J. R., **Gao, J.** Pharmacokinetic Analysis of Local Drug Delivery by Computed Tomography. *Acad. Rad.* **2004**, *11*, 1326-1336.
40. Ough, M.; Lewis, A.; Bey, E.; **Gao, J.**; Ritchie, J.M.; Bornman, D.A.; Boothman, D.A.; Oberley, L.W.; Cullen, J.J. Efficacy of β -Lapachone in Pancreatic Cancer Treatment: Exploiting the Novel, Therapeutic Target NQO1. *Cancer Biology & Therapy*, **2005**, *4*, 54-61.
41. Park, H.J.; Ahn, K.J.; Ahn, S.D.; Choi, E.; Lee, S.W.; Williams, B.; Kim, J.S.; Griffin, R.; Bey, E.A.; Bornmann, W.G.; **Gao, J.**; Park, H.J.; Boothman, D.A.; Song, C.W. Susceptibility of cancer cells to β -lapachone is enhanced by ionizing radiation. *Int. J. Rad. Onco. Biol. Phys.* **2005**, *61*, 212-219.

42. Reinicke, K.E.; Bey, E.A.; Bentle, M.S.; Pink, J.; Ingalls, S.; Hoppel, C.; Burton, G.; Bornmann, W.; **Gao, J.**; Boothman, D. Development of β -Lapachone Prodrugs for Therapy Against Human Cancer Cells with Elevated Levels of NQO1. *Clin. Cancer Res.* **2005**, *11*, 3055-3064.
43. Ai, H.; Pink, J.; Shuai, X.; Boothman, D.; **Gao, J.** Interactions of Polyelectrolyte Shells with Cells. *J. Biomed. Mat. Res.* **2005**, *73*, 303-315.
44. Ai, H.; Flask, C.; Weinberg, R.; Shuai, X.; Pagel, M.; Farrell, D.; Duerk, J.; **Gao, J.** Magnetite-Loaded Polymeric Micelles as Novel Magnetic Resonance Probes. *Adv. Mater.* **2005**, *17*, 1949-1952.
45. Blanco, E.; Weinberg, B.; Stowe, N.; Anderson, J.M.; **Gao, J.** Local Release of Dexamethasone Prevents Fibrosis in Radiofrequency Ablated Livers. *J. Biomed. Mat. Res.* **2006**, *76*, 174-182.
46. Sutton, D.; Durand, R.; Shuai, X.T.; **Gao, J.** A Facile Route for a Self-Compatibilized pH Sensitive Drug Delivery Matrix. *J. Appl. Polymer Sci.* **2006**, *100*, 89-96.
47. Sutton, D.; Kim, S.; Shuai, X.; Leskov, K.; Marques, J.; Williams, B.; Boothman, D.; **Gao, J.** Efficient Suppression of Secretory Clusterin Levels By Polymer-siRNA Nanocomplexes Enhances Ionizing Radiation Lethality in Human MCF-7 Breast Cancer Cells. *Int. J. Nanomed.* **2006**, *1*, 155-162.
48. Wang, F.; Blanco, E.; Ai, H.; Boothman, D.; **Gao, J.** Modulating β -Lapachone Release from Polymer Millirods through Cyclodextrin Complexation. *J. Pharm. Sci.* **2006**, *95*, 2309-2319.
49. Nasongkla, N.; Bey, E.A.; Ren, J.; Ai, H.; Khemtong, C.; Setti, J.G.; Chin, S.F.; Sherry, A.D.; Boothman, D.A.; **Gao, J.** Multifunctional Polymeric Micelles as Cancer-Targeted, MRI-Ultrasensitive Drug Delivery Systems. *Nano Letters* **2006**, *6*, 2427-2430.
50. Bey, E.A.; Wuerzberger-Davis, S.; Pink, J.; Yang, C.; Araki, S.; Reinicke, K.; Bentle, M.; Dong, Y.; Cataldo, E.; Criswell, T.; Wagner, M.; Li, L. **Gao, J.** Boothman, D. A Feedback Regulation, Restriction Threshold Biology, and Redundancy Govern Molecular Stress Responses. *J. Cellular Physiology.* **2006**, *209*, 604-610.
51. Weinberg, B.; Ai, H.; Blanco, E.; Anderson, J.M.; **Gao, J.** Antitumor Efficacy and Local Pharmacokinetics of Doxorubicin via Intratumoral Delivery from Polymer Millirods. *J. Biomed. Mat. Res.* **2007**, *81*, 161-170.
52. Weinberg, B.D.; Blanco, E.B.; Lempka, S.F.; Anderson, J.M.; Exner, A.; **Gao, J.** Combined Radiofrequency Ablation and Doxorubicin-Eluting Polymer Implants for Liver Cancer Treatment. *J. Biomed. Mat. Res.* **2007**, *81*, 205-213.
53. Wang, F.; Saidel, G.; **Gao, J.** A Mechanistic Model of Controlled Drug Release from Polymer Millirods: Effects of Excipients and Complex Binding. *J. Controlled Release.* **2007**, *119*, 111-120.
54. Chaubey, G.S.; Barcena, C.; Poudyal, N.; Rong, C.; **Gao, J.**; Sun, S.; Liu, J.P. Synthesis and Stabilization of FeCo Nanoparticles. *J. Am. Chem. Soc.* **2007**, *129*, 7214-7215.
55. Tao, L.; Crouch, A.; Yoon, F.; Lee, B.K.; Guthi, J.S.; Kim, J.Y.; **Gao, J.** Hu, W. Induced patterning of organic and inorganic materials by spatially discrete surface energy. *J. Vac. Sci. Tech. B*, **2007**, *25*, 1993-1997.

56. Sutton, D.; Wang, S.H.; Nasongkla, N.; **Gao, J.** Dormidontova, E.E. Doxorubicin and β -Lapachone Release and Interaction with Micellar Core Materials: Experiment and Modeling. *Exp. Biol. Med.* **2007**, *232*, 1090-1099.
57. Bey, E.A.; Bente, M.S.; Reinicke, K.E.; Dong, Y.; Yang, C.R.; Girard, L.; Minna, J.D.; Bornmann, W.G.; **Gao, J.**; Boothman, D.A. A Novel NQO1- and PARP-1-Mediated Cell Death Pathway Induced In Non-Small Cell Lung Cancer Cells By β -Lapachone. *Proc. Natl. Acad. Sci. USA*, **2007**, *104*, 11832-11837.
58. Blanco, E.; Bey, E.A.; Dong, Y.; Weinberg, B.D.; Sutton, D.M.; Boothman, D.A.; **Gao, J.** β -Lapachone-containing PEG-PLA Polymer Micelles as Novel Nanotherapeutics against NQO1-overexpressing Tumor Cells. *J. Controlled Release*, **2007**, *122*, 365-374.
59. Weinberg, B.D.; Patel, R.; Exner, A.; Saidel, G.M.; **Gao, J.** Modeling Doxorubicin Transport Properties to Improve Intratumoral Drug Delivery to RF Ablated Tumors. *J. Controlled Release*, **2007**, *124*, 11-19.
60. Sutton, D.; Nasongkla, N.; Blanco, E. **Gao, J.** Functionalized Micellar Systems for Cancer Targeted Drug Delivery. *Pharm. Res.* **2007**, *24*, 1029-1046.
61. Weinberg, B.; Blanco, E.; **Gao, J.** Polymer Implants for Intratumoral Drug Delivery and Cancer Therapy. *J. Pharm. Sci.* **2007**, *97*, 1681-1702.
62. **Gao, J.** EBM Goes BME. *Exp. Biol. Med.* **2007**, *232*, 591.
63. Barcena, C.; Sra, A.K.; Chaubey, G.S.; Khemtong, C.; Liu, J.P.; **Gao, J.** Zinc Ferrite Nanoparticles as MRI Contrast Agents. *Chem. Comm.* DOI: 10.1039/b801041b. **2008**, 2224-2226.
64. Yang, X.; Chen, Y.; Yuan, R.; Chen, G.; Blanco, E.; **Gao, J.**; Shuai, X. Folate-Encoded and Fe₃O₄-Loaded Polymeric Micelles for Dual Targeting of Cancer Cells. *Polymer* **2008**, *49*, 3477-3485.
65. Yang, X.; Deng, W.; Fu, L.; **Gao, J.**; Quan, D.; Shuai, X. Folate-Functionalized Polymeric Micelles for Tumor Targeted Delivery of a Potent Multidrug-resistance Modulator FG020326. *J. Biomed. Mat. Res.* **2008**, *86*, 48-60.
66. Weinberg, B.D.; Patel, R.B.; Exner, A.; Saidel, G.M.; **Gao, J.** Estimating Doxorubicin Transport Properties to Improve Intratumoral Drug Delivery. *Med. Biol. Eng. Comput.* **2008**, *46*, 1039-1049. PMID: 18523817.
67. Sumer, B.; **Gao, J.** Theranostic Nanomedicine for Cancer. *Nanomedicine*, **2008**, *3*, 137-140.
68. Dong, Y.; Chin, S.F.; Blanco, E.; Bey, E.A.; Kabbani, W.; Xie, X.J.; Bornmann, W.G.; Boothman, D.A. **Gao, J.** Intratumoral Delivery of β -Lapachone via Polymer Implants for Prostate Cancer Therapy. *Clin. Cancer Res.* **2009**, *15*, 131-139.
69. Khemtong, C.; Kessinger, C.W.; Ren, J.; Nasongkla, N.; Lubag, A.; Weinburg, B.D.; Sherry, A.D.; **Gao, J.** Off-resonance Saturation MR Imaging of SPIO-encapsulated Micelles in vivo. *Cancer Res.* **2009**, *69*, 1651-1658. (Article was picked for the journal cover)
70. Blanco, E.; Kessinger, C.; Sumer, B.; **Gao, J.** Multifunctional Micellar Nanomedicine for Cancer Therapy. *Exp. Biol. Med.* **2009**, *234*, 123-131.

71. Chen, G.H.; Chen, W.; Wu, Z.; Yuan, R.; Li, H.; **Gao, J.**; Shuai, X.T. MRI-visible polymeric vector bearing CD3 single chain antibody mediated highly efficient gene delivery to T cells for immunosuppression. *Biomaterials*, **2009**, *30*, 1962-1970.
72. Khemtong, C.; Kessinger, C.; **Gao, J.** Polymeric Nanomedicine for Cancer MR Imaging and Drug Delivery. *Chem. Comm.* **2009**, 3497-3510. (Article was picked for the journal cover)
73. Buyukserin, F.; Aryal, M.; **Gao, J.**; Hu, W.H. High Throughput Fabrication of Polymeric Composite Nanorods Using Bilayer Nanoimprint Lithography, *Small*, **2009**, *5*, 1632-1636.
74. Gang, H.; Zhang, C.; Li, S.; Khemtong, C.; Yang, S.; Tian, R.; Minna, J.D.; Brown, K.C.; **Gao, J.** A Novel Strategy for Surface Modification of Superparamagnetic Iron Oxide Nanoparticles for Lung Cancer Imaging. *J. Mater. Chem.* **2009**, *19*, 6367-6372.
75. Setti Guthi, J.; Yang, S.G.; Huang, G.; Li, S.; Khemtong, C.; Kessinger, C.W.; Peyton, M.; Minna, J.D.; Brown, K.C.; **Gao, J.** MRI-Visible Micellar Nanomedicine for Targeted Drug Delivery to Lung Cancer Cells. *Mol. Pharm.* **2010**, *7*, 32-40.
76. Blanco, E.; Bey, E.A.; Khemtong, C.; Yang, S.G.; Setti-Guthi, J.; Kessinger, C.; Bornmann, W.G.; Boothman, D.A.; Gao, J. β -Lapachone Micelle Nanotherapeutics for Lung Cancer Treatment. *Cancer Res.*, **2010**, *70*, 3896-3904.
77. Cohen, E.; Kessinger, C.K.; Khemtong, C.; Gao, J.; Sumer, B. Polymeric micelle nanoparticles for photodynamic treatment of head and neck cancer cells. *Otolaryngol. Head Neck Surg.*, **2010**, *143*, 109-115. (Article was picked for the journal cover)
78. Kessinger, C.; Khemtong, C.; Togao, O.; Takahashi, M.; Sumer, B.D.; Gao, J. In Vivo Angiogenesis Imaging of Solid Tumors by $\alpha_3\beta_3$ -Targeted, Dual-Modality Micellar Nanoparticles. *Exp. Bio. Med.* **2010**, *235*, 957-965. (Best paper award by the Society of Experimental Biology and Medicine)
79. Tian, R.; Seitz, O.; Li, M.; Hu, W.; Chabal, Y.; Gao, J. Infrared Characterization of Interfacial Si-O-Si Bond Formation on Silanized SiO₂ Surfaces. *Langmuir*, **2010**, *26*, 4563-4566.
80. Tao, L.; Zhao, X.M.; Gao, J.; Hu, W. Lithographically Defined Uniform Worm-shaped Polymeric Nanoparticles. *Nanotechnology*, **2010**, *21*, 1-6.
81. Dong, Y.; Bey, E.; Li, L.S.; Kabbani, W.; Yan, J.; Xie, X.J.; Hsieh, J.T.; Gao, J. Boothman, D. PARP-1 hyperactivation as a mechanism for radiosensitization in prostate cancer. *Cancer Res.* **2010**, *70*, 8088-8096.
82. Shah, S.; Liu, L.; Hu, H.; Gao, J. Modeling Particle Shape-Dependent Dynamics in Nanomedicine. *J. Nanotech. Nanosci.*, **2011**, *11*, 919-928.
83. Chen, H.; Khemtong, C.; Yang, X.; Gao, J. Nanonization Strategies for Poorly Water-Soluble Drugs. *Drug Discovery Today*. **2011**, *16*, 354-360.
84. Li, T.; Hu, W.; Liu, Y.; Huang, G.; Sumer, B.D.; Gao, J. Shape-specific Polymeric Nanomedicine: Emerging Opportunities and Challenges. *Exp. Biol. Med.* **2011**, *236*, 20-29.

85. Cao, N.; Cheng, D.; Zou, S.Y.; Ai, H.; Gao, J.; Shuai, X.T. The synergistic effect of hierarchical assemblies of siRNA and chemotherapeutic drugs co-delivered into hepatic cancer cells. *Biomaterials*, **2011**, *32*, 2222-2232.
86. Li, L.S.; Bey, E.A.; Dong, Y.; Meng, J.; Patra, B.; Yan, J.; Xie, X.J.; Brekkend, R.A.; Barnett C.; Bornmann, W.G.; Gao, J.; Boothman, D.A. Modulating endogenous NQO1 levels identifies key regulatory mechanisms of action of α -lapachone for pancreatic cancer therapy. *Clin. Cancer Res.* **2011**, *17*, 275-85.
87. Khemtong, C.; Togao, O.; Ren, J.; Kessinger, C.W.; Takahashi, M.; Sherry, A.D.; Gao, J. Off-Resonance Saturation MRI of Superparamagnetic Nanoprobes: Theoretical Models and Experimental Validations. *J. Mag. Res.* **2011**, *209*, 53-60.
88. Ding, H.; Sumer, B.D.; Kessinger, C.W.; Dong, Y. Huang, G., Boothman, D. A. Gao, J. Nanoscopic Micelle Delivery Improves the Photophysical Properties and Efficacy of Photodynamic Therapy of Protoporphyrin IX. *J. Controlled Release.* **2011**, *151*, 271-277.
89. Kessinger, C.W.; Togao, O.; Khemtong, C.; Huang, G.; Takahashi, M.; Gao, J. Investigation of In Vivo Targeting Kinetics of $\alpha\beta$ 3-Specific Superparamagnetic Nanoprobes by High Temporal Resolution-MRI. *Theranostics.* **2011**, *1*, 263-273.
90. Tian, R.; Regonda, R.; Gao, J.; Hu, W. Reliable multi-Si-nanowires FETs for ultrasensitive protein detection at sub-femtomolar levels. *Lab on a Chip.* **2011**, *11*, 1952-1961.
91. Zhou KJ, Wang YG, Huang X, Luby-Phelps K, Sumer BD, Gao J. Tunable, Ultra-Sensitive pH Responsive Nanoparticles Targeting Specific Endocytic Organelles in Living Cells. *Angew. Chem. Int. Ed.* **2011**, *50*, 6109-6114.
92. Ding, H.; Yu, H.; Dong, Y.; Tian, R.; Huang, G.; Boothman, D.A.; Sumer, B.D.; Gao, J. Photoactivation Switch from Type II to Type I Reactions by Electron-Rich Micelles for Improved Photodynamic Therapy of Cancer Cells Under Hypoxia. *J. Controlled Release.* **2011**, *156*, 276-280.
93. Yu, H.; Zou, Y.; Wang, Y.; Huang, X.N.; Huang, G.; Sumer, B.D.; Boothman, D.A. Gao, J. Overcoming Endosomal Barrier by Amphotericin B-loaded Dual pH-Responsive PDMA-b-PDPA Micelleplexes for siRNA Delivery. *ACS Nano*, **2011**, *5*, 9246-9255.
94. Huang, X.; Dong, Y.; Bey, E.A.; Kilgore, J.A.; Bair, J.S.; Li, L.S.; Patel, M.; Parkinson, E.; Wang, Y.G.; Willaims, N.S.; Gao, J. Hergenrother, P.J.; Boothman, D.A. An NQO1 substrate with potent antitumor activity that selectively kills by PARP1-induced programmed necrosis. *Cancer Res.* **2012**, *72*, 3038-47.
95. Zhou K, Liu H, Zhang S, Huang X, Wang Y, Huang G, Sumer BD, Gao J. Multicolored pH-Tunable and Activatable Fluorescence Nanoplatfrom Responsive to Physiologic pH Stimuli. *J. Am. Chem. Soc.*, **2012**, *134*, 7803-11.
96. Zheng, N.; Dai, W.; Du, W.; Zhang, H.; Lei, L.; Zhang, H.; Wang, X.; Wang, J.; Zhang, X.; Gao, J.; Zhang, Q. A Novel Lanreotide-encoded Micelle System Targets Paclitaxel to the Tumors with Overexpression of Somatostatin Receptors. *Mol. Pharm.* **2012**, *9*, 1175-1188.
97. Huang, G.; Chen, H.; Luo, X.; Yu, H.; Moore, Z.; Bey, E.A.; Boothman, D.A. Gao, J. Superparamagnetic Iron Oxide Nanoparticles: Amplifying ROS Stress to Improve Anticancer Drug Efficacy. *Theranostics*, **2013**, *3*, 116-126. (*Selected as the Cover Article*)

98. Morales, J.; Li, L.; Fattah, F.; Dong, Y.; Bey, E.A.; Patel, M.; Gao, J.; Boothman, D.A. A Review of Poly (ADP-ribose) polymerase (PARP) Mechanisms of Action and Rationale for Targeting in Cancer and Other Diseases. *Crit. Rev. Eukaryot. Gene Expression*, **2013**, *23*, 195-208.
99. Huang X, Huang G, Zhang SR, Sagiya K, Togao O, Ma X, Wang Y, Li Y, Soesbe TC, Takahashi M, Sherry AD, Gao J. Multi-Chromatic pH-Activatable ¹⁹F-MRI Nanoprobes with Binary ON/OFF pH Transitions and Chemical Shift Barcodes. *Angew. Chem. Int. Ed.* **2013**, *52*, 8074-8078. DOI: 10.1002/anie.201301135.
100. Zhang S, Zhou K, Huang G, Takahashi M, Sherry AD, Gao J. A Novel Class of Polymeric pH-Responsive MRI CEST Agents. *Chem. Comm.* **2013**, *49*, 6418-6420. DOI:10.1039/c3cc42452a.
101. Zhou H, Stafford JH, Hallac R, Huang G, Mason RP, Gao J, Thorpe PE, Zhao D. Phosphatidylserine-targeted molecular imaging of tumor vasculature by MRI. *J. Biomed. Nanotechnol.* **2013**, *10*, 846-855.
102. Regonda, S.; Tiang, R.; Greene, S.; Ding, J.; Gao, J.; Hu, W. Silicon Multi-Nanochannel FETs to improve Device Uniformity/Stability and Femto Molar Detection of Insulin in Serum. *Biosens. Bioelectron.*, **2013**, *45*, 245–251.
103. Bey EA, Reinicke RE, Cao L, Moore Z, Srougi M, Varnes M, Anderson V, Pink J, Li L, Patel M, Rommel A, Gao J, Lewis C, Euhus D, Bornmann WG, Buchsbaum D, Spitz DR, and Boothman DA. Catalase Abrogates β -Lapachone-induced PARP1 Hyperactivation-directed Programmed Necrosis in NQO1-positive Breast Cancers. *Mol. Cancer Ther.* **2013**, *12*, 2110-2120.
104. Osamu T, Huang G, Soesbe T, Dimitrov I, Sherry D, Gao J, Takahashi MT. Characterization of lung cancer by amide proton transfer (APT) imaging: An in-vivo study in an orthotopic mouse model. *PLOS One*, **2013**, *8*, e77019.
105. Wang Y, Zhou K, Huang G, Hensley C, Huang X, Ma X, Zhao T, Sumer BD, DeBerardinis RJ, Gao J. A Nanoparticle-based Strategy for the Imaging of a Broad Range of Tumours by Nonlinear Amplification of Microenvironment Signals. *Nat. Mater.* **2014**, *13*, 204-212. doi:10.1038/nmat3819
106. Sun JY, Shen J, Thibodeaux J, Huang G, Wang Y, Gao J, Low PS, Dimitrov DS, Sumer BD. *In Vivo* optical imaging of folate receptor-beta in Head and Neck squamous cell carcinoma. *The Laryngoscope*. **2014**. doi: 10.1002/lary.24606.
107. Ma XP, Huang XM, Huang G, Li LS, Wang YG, Luo XQ, Boothman DA, Gao J. Prodrug Strategy to Achieve Lyophilizable, High Drug Loading Micelle Formulations through Diester Derivatives of β -Lapachone. *Adv. Healthc. Mater.* **2014**, *3*, 1210-1216.
108. Li Y, Wang YG, Huang G, Ma X, Gao J. Chaotropic Anion-Induced Supramolecular Self-Assembly of Ionic Polymeric Micelles. *Angew. Chem. Int. Ed.* **2014**, *53*, 8074-8078.
109. Ma X, Wang YG, Zhao T, Li Y, Su LC, Wang Z, Huang G, Sumer BD, Gao J. Ultra-pH Sensitive Nanoprobe Library with Broad pH Tunability and Fluorescence Response. *J. Am. Chem. Soc.* **2014**, *136*, 11085-11092.
110. Ma X, Huang XM, Moore Z, Huang G, Kilgore JA, Wang YG, Hammer S, Williams NS, Boothman DA, Gao J. Esterase-activatable β -lapachone prodrug micelles for NQO1-targeted lung cancer therapy. *J. Controlled Release*, **2015**, doi:10.1016/j.jconrel.2014.12.027.

111. Wang C, Wang Y, Li Y, Bodemann B, Zhao T, Ma X, Huang G, Hu Z, DeBerardinis RJ, White MA, Gao J. A Nanobuffer Reporter Library for Fine-Scale Imaging and Perturbation of Endocytic Organelles. *Nature Comm.* 6:8524 doi: 10.1038/ncomms9524 (2015). (Highlighted by Chemistry and Biology)
112. Zhang L, Chen Z, Yang K, Liu C, Gao J, Qian F. β -Lapachone and Paclitaxel Combination Micelles with Improved Drug Encapsulation and Therapeutic Synergy as Novel Nanotherapeutics for NQO1-Targeted Cancer Therapy. *Mol. Pharm.* 2015, DOI: 10.1021/acs.molpharmaceut.5b00448.
113. Dutchak PA, Laxman S, Estill SJ, Wang C, Wang YG, Bulut GB, Gao J, Huang LJ, Tu BP. Regulation of Hematopoiesis and Methionine Metabolism by mTORC1 Inhibitor NPRL2. *Cell Reports.* 2015, **12**, 371-379.
114. Chakrabarti G, Sillers M, Ilcheva M, Liu Y, Moore Z, Lou X, Gao J, Anderson G, Liu L, Burma S, DeBerardinis R, Gerson S, Boothman DA. Inhibiting base excision repair signaling sensitizes pancreatic cancer to PARP1-driven metabolic catastrophe induced by the NQO1 bioactivatable drug, β -lapachone. *Cancer Metab.* **2015**, 3, 12.
115. Ma X, Moore Z, Huang G, Huang XM, Boothman DA, Gao J. Nanotechnology-Enabled Delivery of NQO1 Bioactivatable Drugs. *J. Drug Target.* **2015**, 23, 672-680.
116. Li Y, Wang Z, Wei Q, Luo M, Huang G, Sumer BD, Gao J. Non-covalent interactions in controlling pH-responsive behaviors of self-assembled nanosystems. *Polym. Chem.* **2016**, 7, 5949-5956.
117. Zhao T, Huang G, Yang S, Ramezani, S, Li Y, Wang Y, Ma X, Xie XJ, Thibodeaux J, Sun X, Sumer BD, Gao J. pH Transistor Nanoprobe Advances Cancer Detection and Surgery. *Nature BME*, **2016**, 1, 0006.
118. Yang L, Zhao T, Huang G, Sumer B, Gao J. Molecular Basis of pH-Triggered Molecular Self-Assembly. *Nature Comm.* **2016**, 7, 13214.
119. Luo M, Samandi LZ, Wang Z, Chen ZJ, Gao J. Synthetic nanovaccines for immunotherapy. *J. Controlled Release.* **2017**, 263, 200-210.
120. Wang C, Zhao T, Li Y, Huang G, White MA, Gao J. Investigation of Endosome and Lysosome Biology by Ultra pH-Sensitive Nanoprobes. *Adv. Drug. Deliver. Rev.* **2017**, 113, 87-96.
121. Wang Y, Wang C, Huang G, Zhao T, Ma X, Li Y, Wang Z, Gao J. Digitization of Endocytic pH by Hybrid Ultra-pH Sensitive Nanoprobes at Single Organelle Resolution. *Adv. Mater.* **2017**, DOI: 10.1002/adma.201603794.
122. Aroh C, Wang Z, Dobbs N, Luo M, Chen Z, Gao J, Yan N. Innate immune activation by cGAMP-PC7A nanoparticles leads to potent and long-acting antiretroviral response against HIV-1. *J. Immunol.* **2017**, 199, 3840-3848.
123. Wang Z, Luo M, Mao C, Wei Q, Zhao T, Huang G, Gao J. A Redox-Activatable Fluorescent Sensor for the High-Throughput Quantification of Cytosolic Delivery of Macromolecules. *Angew. Chem. Int. Ed.* **2017**, 56, 1319-1323.
124. Luo M, Wang Z, Wang H, Cai H, Lu Z, Chen X, Huang G, Porembka M, Lea J, Frankel A, Chen ZJ, Gao J. STING-Activating Nanovaccine for Cancer Immunotherapy. *Nature Nanotech.* **2017**, 12, 648-654

(News and Views by Nature Nanotechnology, highlighted by EurekAlert, Phys.org, Nanowerk, Newswise, BioTechniques).

125. Wang C, Niederstrasser H, Li Y, Olswald N, Lin R, Jaramillo J, Douglas P, MacMillan E, Wang Z, Brekken R, Posner BA, MacMillan JB, Hang G, Gao J, White MA. Small-molecular TFEb pathway agonists ameliorate metabolic syndrome and modulate life-span. *Nat. Comm.* **2017**, *8*, 2270.
126. Li Y, Wang Y, Huang G, Gao J. Cooperativity Principles in Self-Assembled Nanomedicine. *Chem. Rev.* **2018**, *118*, 5359-5391.
127. Kong C, Li Y, Liu Z, Ye J, Wang Z, Zhang L, Liu H, Liu C, Pang H, Hu Z, Gao J, Qian F. Targeting KRAS-mutant Pancreatic Cancer by Lysosomal Inhibition of Protein Catabolism and Drug Release. *ACS Nano.* **2019**, *13*, 4049-4063.
128. Luo M, Liu Z, Zhang X, Han C, Samandi LZ, Dong C, Sumer BD, Lea J, Fu YX, Gao J. Synergistic STING Activation by PC7A Nanovaccine and Ionizing Radiation Improves Cancer Immunotherapy. *J. Controlled Release.* **2019**, *300*, 154-160.
129. Feng Q, Wilhelm J, Gao J. Transistor-like Ultra-pH Sensitive Nanoparticles. *Acc. Chem. Res.* **2019**, *52*, 1485-1495.
130. Huang G, Zhao T, Wang C, Nham K, Xiong Y, Gao X, Wang Y, Hao G, Ge WP, Sun XK, Sumer BD, Gao J. PET Imaging of Occult Tumours by Temporal Integration of Tumour-Acidosis Signals from pH-Sensitive ⁶⁴Cu-labelled Polymers. *Nature Biomed. Eng.* **2020**, *4*, 314-324. (News and Views by J. Rao at *Nature Biomed. Eng.*)
131. Wang X, Wilhelm J, Li W, Li S, Wang Z, Huang G, Wang J, Tang H, Khorsandi S, Sun Z, Evers B, Gao J. Polycarbonate-based Ultra-pH Sensitive Nanoparticles Improve Therapeutic Window. *Nature Comm.* **2020**, *11*, 5828.
132. Voskuil FJ, Steinkamp PJ, Zhao T, van der Vegt B, Koller M, Doff JJ, Jayalakshmi Y, Hartung JP, Gao J, Sumer BD, Witjes MJH, van Dam GM. Exploiting metabolic acidosis in solid cancers using a tumor-agnostic pH-activatable nanoprobe for fluorescence-guided surgery. *Nature Comm.* **2020**, *11*, 3257.
133. Li S, Bennett ZT, Sumer BD, Gao J. Nano-Immune-Engineering Approaches to Advance Cancer Immunotherapy: Lessons from Ultra-pH-Sensitive Nanoparticles. *Acc. Chem. Res.* **2020**, *53*, 2546-2557.
134. Bennet ZT, Feng Q, Bishop JA, Huang G, Sumer BD, Gao J. Detection of Lymph Node Metastases by Ultra-pH Sensitive Polymeric Nanoparticles. *Theranostics.* **2020**, *10*, 3340-3350.
135. Huang TY, Feng Q, Wang ZH, Li W, Sun ZC, Wilhelm J, Huang G, Vo T, Sumer BD, Gao J. Tumor-targeted Inhibition of Monocarboxylate Transporter 1 Improves T Cell Immunotherapy of Solid Tumors. *Adv. Healthc. Mater.* **2020**, 2000549.
136. Wilhelm J, Wang ZH, Sumer BD, Gao J. Exploiting Nanoscale Cooperativity for Precision Medicine. *Adv. Drug Deliv. Rev.* **2020**, *158*, 63-72.
137. Wilhelm J, Perez MQ, Basava V, Gao J. Antigen Folding Improves Loading Efficiency and Antitumor Efficacy of PC7A Nanoparticle Vaccine. *J. Controlled Release.* **2020**, *329*, 353-360.

138. Li S, Luo M, Wang Z, Feng Q, Wilhelm J, Wang X, Wang J, Cholka A, Sumer BD, Yu HT, Gao J. A Polyvalent STING Agonist Prolongs Innate Activation Against Cancer. *Nature Biomed. Eng.* **2021**, *5*, 455-466.
139. Steinkamp PJ, Voscuil FJ, van der Vegt B, Doff JJ, Schepman KP, Vsscher SA, Kelder W, Jayalakshmi Y, Gao J, Sumer BD, van Dam GM, Witjes MJH. A standardized framework for fluorescence-guided margin assessment for head and neck cancer using a tumor acidosis sensitive optical imaging agent. *Mol. Imaging Biol.* **2021**, *23*, 809-817.
140. Bhalli H, Chen SQ, Day A, Tillman B, Gordin E, Truelson J, Sher D, Myers L, Gao J, Sumer BD. Factors Associated with Lymph Node Count in Mucosal Squamous Cell Carcinoma Neck Dissection. *Laryngoscope*, **2021**, *131*, 1516-1521.
141. Bennett ZT, Li S, Sumer BD, Gao J. Polyvalent design in the cGAS-STING pathway. *Semin. Immunol.* **2021**, 101580, 1044-5323.
142. Jiang X, Wang J, Zheng X, Yin W, Wilhelm J, Cao J, Huang G, Zhang J, Lu Z, Sumer BD, Lea J, Gao J, Luo M. Intratumoral Administration of STING-activating Nanovaccine Enhances T Cell Immunotherapy. *J. Immunother. Cancer.* **2022**, *10*, e003960.
143. Zi Z, Zhang Z, Feng Q, Kim C, Wang XD, Scherer P, Gao J, Levine B, Yu Y. Quantitative Phosphoproteomic Analyses Identify STK11IP as a Lysosome-Specific Substrate of mTORC1 that Regulates Lysosomal Acidification. *Nature Comm.* **2022**, *13*, 1760.
144. Feng Q, Liu ZD, Yu XX, Huang TY, Chen JH, Wang J, Wilhelm J, Li SX, Song JW, Li W, Sun ZC, Sumer BD, Li B, Fu YX, Gao J. Lactate Increases Stemness of CD8⁺ T Cells to Augment Anti-Tumor Immunity. *Nature Comm.* **2022**, *13*, 4981.
145. Wang M, Singh P, Feng Q, Wilhelm J, Bennett ZT, Huang G, Gao J. Elucidation of Protonation Cooperativity of STING-Activating Polymer. *Adv. Mater.* **2023**, 2305255.
146. Annapragada A, Sikora A, Marathe H, Liu S, Demetriou M, Fong L, Gao J, Kufe D, Morris Z, Vilar E, Hutson A, Odunsi K. The Cancer Moonshot Immuno-Oncology Translational Network (IOTN) at Age 5: Accelerating Cancer Immunotherapies. *J. Natl. Cancer Inst.* **2023**, *115*, 1262-1270.
147. Zhu M, Kim J, Deng Q, Ricciuti B, Alessi JV, Eglenden-Polat B, Bender M, Huang HC, Kowash RR, Cuevas I, Bennett Z, Gao J, Minna JD, Castrillon DH, Awad MM, Akbay EA. Loss of p53 and mutational heterogeneity drives immune resistance in an autochthonous mouse lung cancer model with high tumor mutational burden. *Cancer Cell*, **2023**, *41*, 1-18.
148. Feng Q, Bennett Z, Grichuk A, Huang T, Faubert B, Huang G, Chen M, DeBerardinis RJ, Sumer BD, Gao J. Severely polarized extracellular acidity around tumor cells. *Nature Biomed. Eng.* **2024**, doi.org/10.1038/s41551-024-01178-7.
149. Wang J, Li S, Wang M, Wang X, Chen SQ, Sun ZC, Ren XB, Huang G, Sumer BD, Yan N, Fu YX, Gao J. STING licensing of type I dendritic cells potentiates antitumor immunity. *Science Immunol.* **2024**, *9*, eadj3945.
150. Bennett Z, Huang G, Dellinger M, Sumer B, Gao J. Stepwise ultra-pH-sensitive micelles overcome a pKa barrier for systemic lymph node delivery. *ACS Nano.* **2024**, *18*, 16632-16647.

151. Chen S, Ye S, Huang G, Sun Z, Feng Q, Wang M, Pantoja R, Sumer BD, Gao J. Stimuli-responsive STING nanovaccine for systemic therapy of HPV-induced cancers. *Proc. Natl. Acad. Sci. USA*, under review.

Book Chapters

1. Gao, J.; Mrksich, M.; Mammen, M.; Whitesides, G. M. Using Capillary Electrophoresis to Study Interactions of Proteins with Ligands, in *High Performance Capillary Electrophoresis*, Khaledi, M. G. Ed; John Wiley & Sons, Inc.: New York, 947-972 (1998).
2. Weinberg, B.; Qian, F.; Gao, J. Development and Characterization of Dual Release Millirods for Tumor Treatment, in *Polymeric Drug Delivery: Science & Application*. S. Svenson, Ed.; ACS Symposium Series. 169-185 (2006).
3. Gao, J.; Nasongkla, N.; Khemtong, C. cRGD-Encoded, MRI-Visible Polymeric Micelles for Tumor-Targeted Drug Delivery, in *Nanotechnology For Cancer Therapeutics*, Amiji M.M. Ed; CRC Press. 465-475 (2007).
4. Barcena, C.; Sra, A.K.; Gao, J. Applications of Magnetic Nanoparticles in Biomedicine, in *Nanoscale Magnetic Materials and Applications*, Liu P., Sellmyer, D., Fullerton, E., and Gutfleisch, O. Eds; Springer Science & Business Media, Inc. 591-626 (2009).
5. Ding, H.Y.; Sumer, B.D.; Gao, J. Clinical Applications of Heme Biosynthetic Pathway: Photodynamic Therapy with Protoporphyrin IX, in *Heme Biology*, Zhang L. Ed. World Scientific, Inc. 197-209 (2011).
6. Huang, G.; Khemtong, C.; Bey, E.A.; Boothman, D.A.; Sumer, B.D.; Gao, J. Theranostic Polymeric Micelles for Cancer Imaging and Therapy, in *Multifunctional Nanoparticles for Drug Delivery Applications*, Svenson S.; Prod'homme R.K. Springer Science & Business Media, Inc. 257-276 (2012).
7. Wang ZH, Zhang, XY, Huang G, Gao J. pH-Responsive Drug Delivery Systems. In *Stimuli-Responsive and Triggered Drug Delivery Systems*. A. Singh and M. Amiji (Eds). Royal Society of Chemistry, 51-82 (2018).

Selected Invited Lectures (Partial list from 2006-present)

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| 2006 | NCI Lung SPORE 2006 Winter Meeting. Los Angeles, CA. |
| 2006 | Moore's Comprehensive Cancer Center, University of California San Diego. |
| 2006 | Durect Corporation, San Jose, California. |
| 2006 | NanoTX'06: The Promise of Tomorrow, The Business of Nanotechnology. |
| 2006 | 62 nd Southwest Regional Meeting of the American Chemical Society meeting. Houston, TX. |
| 2006 | Stevens Institute of Technology. Newark, NJ. |
| 2006 | The Fine Particle Society 2006 International Conference on Bio and Pharmaceutical Science and Technology. San Diego, CA. |
| 2007 | School of Chemistry and Chemical Engineering, ZhongShan School of Medicine, Sun Yat-Sen University. GuangZhou, China |
| 2007 | 13 th International Symposium on Recent Advances in Drug Delivery Systems. Salt Lake City, Utah. |
| 2007 | Chinese Society of Magnetic Resonance and Medicine (CSMRM) Conference. Dalian, China. |
| 2007 | Joint Molecular Imaging Conference. Providence, Rhode Island. |
| 2007 | Materials Research Society Meeting. Boston, MA. |
| 2008 | IEEE Engineering in Medicine and Biology Society. Dallas, TX. |

2008 Jones Seminar at the Department of Biomedical Engineering, Dartmouth College.
2008 WMR Biomedical. Boston, MA.
2008 Bio-Nano Manufacturing Grand Challenges for 2020, National Science Foundation.
2008 Gordon Research Conference on Drug Carriers and Medicine.
2008 College of Chemistry and Molecular Engineering, Peking University, Beijing, China.
2008 Institute of Chemistry, Chinese Academy of Sciences, Beijing, China
2008 Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China
2009 9th Annual Targeted Therapies of the Treatment of Lung Cancer. Santa Monica, CA.
2009 Cancer Research Institute, University of Cambridge, UK.
2009 IEEE Engineering in Medicine and Biology Society (EMBC'09), Minneapolis, Minnesota
2009 Keynote speaker in the 4th International Symposium on Biomedical Engineering. Bangkok, Thailand
2010 School of Chemistry and Chemical Engineering, Sun Yat-Sen University. GuangZhou, China
2010 Particles 2010 Conference. Orlando, FL.
2010 The 4th International Symposium on Polymer Chemistry (pc2010). SuZhou, China.
2010 Department of Pharmacology, School of Medicine, Beijing University. Beijing, China.
2010 American Chemical Society Polymer Materials Science and Engineering Symposium. Boston, MA.
2011 Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University, West Lafayette, IN
2011 Elkin Lecture, Winship Comprehensive Cancer Center, Emory University, Atlanta, GA
2011 IEEE/NIH 2011 Life Science Systems and Applications Workshop, Washington, DC
2011 Plenary lecture, International Symposium on Functional Polymers for Nanomedicine, Hangzhou, China
2011 The 10th China-Japan-Korea Foresight Joint Symposium on Gene Delivery and International Symposium on Biomaterials
2011 Center of Cancer Nanotechnology of Excellence, Stanford University, CA
2012 Department of Pharmacology, University of Pennsylvania, PA
2012 Keynote speech, Beyond the Doctorate Research Day, Upstate Medical University, NY
2012 Department of NanoEngineering, University of California, San Diego
2012 Keynote speech, Inauguration of the Centre for Nanomedicine and Theranostics, Technical University of Denmark, Copenhagen, Denmark
2012 AAPS Student Chapter Invited Seminar, School of Pharmacy, UT Austin
2013 International Advanced Drug Delivery Symposium, Taipei, Republic of China
2013 School of Pharmacy, Beijing University, Beijing, China
2013 College of Pharmacy, Oregon State University, Corvallis, OR
2013 Keynote speaker, Chinese Association of Pharmaceuticals and Controlled Release Society, Wuhan, China
2014 Department of Pharmaceutical Sciences, School of Pharmacy, University of Michigan
2014 Department of Pharmaceutical Sciences, School of Pharmacy, University of Pittsburgh
2014 Biomedical Optics (BIOMED) Meeting, Society of Optics, Miami, Florida
2014 International Nano Drug Delivery Symposium, Chapel Hill, NC
2015 Keynote speaker, Chinese Pharmaceutical Conference, Hangzhou, China
2015 Distinguished speaker, School of Pharmacy, Ohio State University, Columbus, Ohio
2016 Keynote speaker, Molecular, Cellular and Tissue Bioengineering Symposium, Arizona State University

2016 Department of Chemistry, University of California at Irvine, Irvine, CA

2016 Molecular Engineering and Science Institute, Seattle, WA

2016 Program in Polymers and Soft Matter, Massachusetts Institute of Technology, Cambridge, MA

2016 Keynote speaker, The 1st International Society for Nanomedicine, Korea University, Seoul, Korea

2016 Yonsei-IBS Distinguished Lecture, Yonsei University, Seoul, Korea

2016 School of Pharmacy, Peking University School of Medicine, Beijing, China

2016 Case Comprehensive Cancer Center, Case Western Reserve University, University Hospitals of Cleveland, Cleveland, Ohio

2017 Department of Chemistry, Chinese University of Hong Kong, Hong Kong, China

2017 Keynote speaker, Second International Symposium on Translational Biomaterials and Nanomedicine, Guangzhou, China

2017 Monsanto Lectureship, School of Pharmacy, Qinghua University, Beijing, China

2017 Keynote, Chinese American Society of Nanomedicine and Nanotechnology, Suzhou, China

2017 National Center for Nanoscience and Technology, Beijing, China

2017 Samuel Oschin Comprehensive Cancer Center, Cedars-Sinai Medical Center, Los Angeles, CA

2017 Department of Biomedical Engineering, Texas A&M University

2017 School of Pharmaceutical Science, University of Utah

2017 Future in Medicine, Asian Robotic Meeting for Colorectal Surgeons, Daegu, Korea

2017 Department of Chemistry and Chemical Biology, Northeastern University, Boston, MA

2017 Symposium on Emerging Materials and Devices for Engineering Biological Function and Dynamics, Materials Research Society, Boston, MA

2017 Plenary speaker, End2Cancer, Emerging Nanotechnology & Drug Delivery Applications for Cancer, University of Oklahoma

2018 Keynote speaker, International Advanced Drug Delivery Symposium 2018, Taipei, Taiwan

2018 Department of Chemistry, Chinese University of Hong Kong, Hong Kong, China

2018 Department of Pharmaceutics, Beijing University School of Medicine, Beijing, China

2018 School of Pharmacy, University of Toronto, Toronto, Canada

2018 Invited speaker, Micro- and Nanoparticle Delivery, 2018 Controlled Release Society Annual Meeting, New York, NY

2018 Plenary Speaker, 5th Symposium on Innovative Polymers for Controlled Delivery, Suzhou, China

2018 Plenary Speaker, Sixteenth International Nanomedicine and Drug Delivery Symposium (NanoDDS'18), Portland, OR

2018 Plenary Speaker, 3rd International Conference on Nanomedicine of China, Shanghai, China

2019 Cancer Nanotechnology Gordon Research Conference, Snow Mountain, VT.

2020 NCI Immuno-Oncology Translational Network Annual Conference

2020 NCI Alliance for Nanotechnology in Cancer PI Meeting

2021 Plenary lecture, China Nanomedicine, 4th International Symposium on Nanomedicine

2021 NCI Alliance for Nanotechnology in Cancer PI Meeting

2021 Forbeck Forum on Immunotherapies and Mechanism of Immune Escape, Denver, CO

2022 18th International Symposium on Recent Advances in Drug Delivery Systems: A Tribute to the Late Sung Wan Kim, Salt Lake City

2022 American Association of Cancer Research. New Orleans, LA

2022 Gordon Research Conference. Drug Carriers in Medicine and Biology. Mount Snow, VT.

- 2022 Forbeck Scholar Retreat, Forum mentor. Lake Geneva, WI.
- 2023 STING & TLR-Targeting Therapies Summit 2023. Boston, MA.
- 2023 Innovations in Cancer Prevention and Research Conference VI, CPRIT Biennial Research Conference, Galveston, TX
- 2023 21st International Nanomedicine and Drug Delivery Symposium (nanoDDS), Boston, MA
- 2023 Cancer Imaging Program, National Cancer Institute
- 2024 Nanomaterials for Biomedical Engineering, Manipal Academy for Higher Education, Manipal, India (virtual)
- 2024 Co-chair, Cancer and Nanotechnology, Forbeck Forum, Pacific Grove, CA
- 2024 Chemical probes for lysosomal biology, The Royal Society, York, UK
- 2024 Distinguished Lecture Series, Simmons Comprehensive Cancer Center, UT Southwestern