

Jinming Gao, Ph.D.

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

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Research Synopsis

Cooperativity manifests itself from biology to society. Molecular cooperativity is essential to attain order out of chaos, which often leads to emergent properties where the whole is bigger than the 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 surgery, and STING-activating nanoparticles for cancer immunotherapy. We are closely working with physicians and biotech companies to translate lab inventions to the clinics to advance patient care. pH sensor technology (Pegsitacianine) is currently in Phase 2 clinical trials and received fast-track status from the FDA for precision cancer surgery.

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 Oncology, Pharmacology, Otolaryngology (2016-) and Cell Biology (2020-), 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

Honors and Service

2021	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-	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
2007	Distinguished Overseas Young Scientist, National Natural Science Foundation of China
2000	Young Investigator Award from the Whitaker Foundation
1991	Highest honor Guang-Hua fellowship, Peking University, Beijing, China

Commercialization and Clinical Translation Efforts

I founded OncoNano Medicine, Inc. to help translate the pH threshold nanoparticle technology to the clinics. In 2014, OncoNano received a \$6 million new company formation award from the Cancer Prevention and Research Institute of Texas to start the company, and has raised additional \$110 million 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), is currently in Phase 2 clinical trials and has received fast-track status from the FDA for cancer surgery. In 2019, OncoNano received an additional \$15.4 million Product Development Award from CPRIT to develop STING-activating nanoparticles for cancer immunotherapy.

Impact Summary

>130 publications, >30,000 citations, ~2500 citations per year, H-index = 74

2 publications in *Science*, >10 publications in *Nature family journals*

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

Contributions to Science

1. Molecular basis of cooperativity

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. (*Surprising anti-Hofmeister trend in anion-induced nanophase separation in contrary to protein solubilization*)

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 pH-Triggered Molecular Self-Assembly. **Nature Commun.** 2016, 7, 13214. (*Uncovered molecular mechanism of pH cooperativity and identified unprecedented 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*).

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*)

3. 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)*

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, 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.** 2017, 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)*

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

Grant AwardsAs PI or co-PI (Active)

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 R01 CA216839 4/1/2018-3/31/2023 \$1.9 M Total
STING-Activating Synthetic Nanovaccine for HPV-induced Cancers

NIH-NCI U01 CA218422 9/30/2017-8/31/2022 \$3.2 M Total
STING-Activating Polymeric Nanovaccines for T Cell Therapy of Melanoma

NIH-NCI R01 CA211930 7/1/2017-6/30/2022 \$1.9 M Total
pH Transistor Nanoprobes for Detection of Occult Nodal Metastases

OncoNanomedicine SRA 12/15/2019-5/15/2021 \$2.5 M Total
Development of pH sensitive nanomedicine for cancer imaging and therapy

As PI (Past)

CPRIT RP180343 3/1/2018-8/28/2021 \$886K Total
Turn ON the Tumor Contrast in Lymph Node Metastases for Occult Disease Detection

NIH-NCI R01 CA192221 7/1/15-6/30/20 \$1.9 M Total
Nanoprobe-enabled Delineation of Tumor Margins for Improved Surgical Therapy

NIH-NCI P30CA142543 10/1/2017-9/30/2019 \$100 K Total
Pilot grant: Combining Nanovaccine and Radiotherapy for Immunotherapy of HPV-Induced Cancers

CPRIT RP140140 8/20/2014-2/28/2018 \$900K Total
Turn ON the Tumor Contrast for Surgical Resection of Head and Neck Cancers

NIH-NCI P50 CA196516 9/1/2017-8/30/2018 \$40 K Total
Pilot grant: PET Acidotic Tracers for Kidney Cancer Imaging

NIH-NIBIB R01 EB013149 7/1/11-6/30/15 \$1.5 M Total
pH-activatable Micellar Nanoprobes for Cancer Molecular Imaging

CPRIT RP120897 6/01/2012-5/31/2015 \$1.0 M Total
 β -Lapachone Nanotherapeutics for NQO1-Targeted Therapy of Cancer

CPRIT RP120094 12/01/2011-11/30/2014 <i>Turn ON the Tumor Contrast for Surgical Resection of Head and Neck Cancers</i>	\$965 K Total
Texas FUSION Fund 1/1/2011-12/31/2012 <i>Dual MRI/Fluorescent Nanoprobes for Robotic Surgery of H&N Tumors</i>	\$200 K Total
NIH-NCI R01 CA129011 7/9/08-5/31/12 <i>Ultra-Sensitive MR Probes for Molecular Diagnosis of Lung Cancer</i>	\$1.6 M Total
NIH-NCI R01 CA122994 5/1/07-2/28/12 <i>Micellar Nanotherapeutics for Targeted Therapy of Lung Cancer</i>	\$1.5 M Total
NIH-NIBIB R21 EB005394 9/1/05-8/31/09 <i>MFe₂O₄-Loaded Polymer Micelles as Ultra-Sensitive MR Molecular Probes</i> <i>Minority supplement to Carlos Barcena 9/1/06-8/31/09</i>	\$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> <i>Minority supplement to Elvin Blanco 8/1/02-4/30/07</i>	\$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 (Active)</u>	
NIH-NCI R01 CA13291074 (PI: B Sumer) 12/1/21-11/30/26 <i>A pH Responsive Transistor-like Nanoprobe for Sensitive Detection of Unknown Primary Cancers of the Head and Neck</i>	\$2.3 M 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	\$275 K Total

¹H MRI based nanosensors for imaging tumor oxygenation

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 <i>Use of β-lapachone-millirods for improved therapy of prostate cancer</i>	\$573 K Total
Ohio Biomed Res Tech Trust Partnerships (PI: J Nadeau) 6/1/03-6/30/05 <i>Genetics of gastrointestinal cancers (\$3.3 M Total)</i>	\$3.3M Total

Advisee Fellowships/Competitive Awards

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
Wei Li (PhD in Pharmacy, Zhejiang Univ.), Lab Manager
Pranav Idnany (BA in Molecular and Cell Biology, UC Berkeley), Research Technician
Katy Torres, Research Assistant I

Ryan Smith (BA in Chemistry, Niagara Univ.), Research Assistant I
 Oreoluwa Onabolu (BS/MS, Georgetown University), Research Assistant II
 Chris Clyne, Research Assistant I

PhD students:

Jonathan Wilhelm (BS, Texas Tech. 2017), Biomedical Engineering Program
 Jiwon Song (BS, Wash U. 2017), Biomedical Engineering Program
 Zachary Bennet (BS, UT Austin, 2017), Biomedical Engineering Program
 Maggie Wang (BS/MS, West Washington Univ., 2020), Biomedical Engineering 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)
 Xuexin Yu (2019-, PhD in Genomics and Bioinformatics, Beijing Institute of Genomics, Chinese Academy of Sciences, co-advising with Prof. Bo Li)
 Jiahui Chen (2019-, PhD in Bioinformatics, Chinese Academy of Sciences)

Past PhD Advisees with Placement (12 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 of Radiology and Biomed Eng., 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 Vice 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*'; Director 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

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 Dr. Daniel J. Kohane, Harvard Medical School/Boston Children's Hospital

Past Postdoctoral Advisees with Placement (26 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, Chinese Pharmaceutical University, Nanjing, China

Jian Wang (2019-2021, PhD in Immunology, Peking Union Medical College; fellowships from China Education Ministry), Assistant Professor, Tianjin Blood Institute, Tianjin, 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)

High School Students

Alyssa Chen and Shriya Das (2013-2014 National Finalist, Siemens Competition)

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 51 st 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

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-	<i>Molecular and Translational Nanomedicine</i> , UT Southwestern

Professional Service

Steering Committee, 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-) 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)*

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 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)

Patents

- (1) Niklason, L.; Gao, J.; Langer, R. S. Tissue-engineered tubular construct having circumferentially oriented smooth muscle cells. Patent number: 6,537,567. Issued Date: March 25, 2003. (*Licensed to Humacyte*)
- (2) Gao, J.; Nasongkla, N.; Pink, J.; Boothman, D.A. Lapachone delivery systems, compositions and uses related thereto. Patent Number: US 6, 890, 950. Issued Date: May 10, 2005.
- (3) Gao, J.; Boothman, D. Methods of Treating Cancer Comprising Targeting NQO1. Patent No. 9469878 Issued in the US.
- (4) Zhou, Y.; Gao, J.; Dong, Y.; Boothman, D. pH-Sensitive Compositions for the Delivery of β -lapachone and methods of use. Patent No. 9631041. Issued in the US.
- (5) Zhou, K.; Huang, X.N.; Wang, Y.G.; Boothman, D.A.; Gao, J. Novel Block Copolymer and Micelle Compositions and Methods of use thereof. Patent No. 9751970; US9,751,970 B2. Issued in the US. (*Licensed to OncoNano Medicine, Phase 2 clinical trial*)
- (6) Zhou, K.; Sumer, B.S.; Gao, J. Multicolored pH-Activatable Fluorescence Nanoplatfrom. PCT/US2013/035050 (WO2013/152059); US13/827,197 (US-2013-0330278A1). Issued in the US, AU, China and Japan. (*Licensed to OncoNano Medicine*)
- (7) Gao, J.; Huang, G.; Zhao, T.; Ma, X.; Wang, Y.; Yang, Li; Sumer, B. Ultra-pH Sensitive (UPS) Nanoprobe Library. 15/369,701. Published. (*Licensed to OncoNano Medicine*)
- (8) Gao J, Chen ZJ, Luo M, Wang Z, Wang H, Cai H, Huang G. Minimalist Nanovaccine Design for Immunotherapy of Cancer and Infectious Diseases. PCT/US2017/020451. Published. (*Licensed to OncoNano Medicine*)
- (9) Liu Y, Wei Q, Ma X, Huang G, Gao J. Naphthoquinones, prodrugs and methods of use thereof. PCT/US2016/067142.
- (10) Wang Z, Huang G, Gao J. Redox-Activatable Fluorescent Sensors for the Monitoring of Cytosolic Delivery of Macromolecules. PCT/US2017/051075.
- (11) Wang C, Yang L, Huang G, Posner B, White M, Gao J. Novel TFEB Pathway Agonists for Metabolic Diseases and Ageing. 62/585,333.

- (12) Gao J, Huang G, Zhao T, Sumer BD, Sun XK. Dual modality UPS nanoprobe for tumor acidosis imaging. UTSD3213US.P1. SN 62/731,848. Patent filed on Sept. 15, 2018. (Licensed by OncoNano Medicine)
- (13) Wang X, Tang HL, Li W, Wilhelm J, Sumer BD, Gao J. Biodegradable Ultra-pH Sensitive Polymers. UTSD.P3433US.P1.
- (14) Huang TY, Feng Q, Sumer BD, Gao J. pH Responsive Block Copolymer Compositions that Inhibit MCT1 and Related Proteins. UTSD.P3766.
- (15) Li SX, Gao, J. Polyvalent STING Activating Compositions and Uses Thereof. UTSD.P3829US.P1.

Selected Media Coverage

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 Newsline: Nanoparticle Vaccine Shows Potential to Fight Multiple Cancer Types

(<http://www.sciencenewsline.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

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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.
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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.
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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.
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Book Chapters

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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).
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Selected Invited Lectures (Partial list from 2006-present)

- 2006 NCI Lung SPORE 2006 Winter Meeting. Los Angeles, CA.
- 2006 Moores 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 62nd 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 13th 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, Wester 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 Pharmaceutics 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 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