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EDUCATION

- 2006–2011 Ph.D. in Chemistry, University of Maryland, College Park (Advisor: Herman O. Sintim)
2002–2006 B.Sc. in Chemistry, Peking University, Beijing, China (Advisor: Zhi-Xiang Yu)

PROFESSIONAL APPOINTMENTS

- 2019–present Assistant Professor at the University of Kansas, Lawrence
2014–2009 Postdoc Associate at the Scripps Research, La Jolla, California (Advisor: Peter G. Schultz)
2011–2014 Postdoc Researcher at the Johns Hopkins University, Baltimore, Maryland (Advisor: Jun O. Liu)

RESEARCH AREA

My independent research group at the University of Kansas (KU) is focused on the development of new bioactive molecules to treat or probe human disease states and novel methods or platforms for drug discovery and mechanistic studies. We have three specific research directions:

1. Development of new molecules and pharmacological mechanisms to control RNA splicing.
2. Development of novel chimeric molecules that recruit new functions on RNAs.
3. Design of new chemical probes to modulate human immunity.

RESEARCH FUNDING

Active Research Grants

1. **National Institute of Health (NIGMS) R35 MIRA Award** (PI, R35GM147498). *Modulating gene expression by RNA-targeting chimeras.* \$ **1,250,000** direct cost (August 1, 2022 – May 31, 2027).
2. **W. M. Keck Foundation Grant** (PI). *Systematic identification of splicing modulating regulatory elements.* \$ **1,200,000** direct cost (July 1, 2022 – June 30, 2025).
3. **Parkinson's Foundation Impact Award** (PI). *Treatment of Parkinson's disease using alpha-synuclein RNA degraders.* \$ **150,000** direct cost (July 1, 2023 – December 31, 2024).
4. **KU Research Grant Opportunity (GO)** (PI). *Development of an oral STING agonist for cancer treatment.* \$ **30,000** direct cost (April 30, 2023 – April 30, 2024).
5. **KU Cancer Center Pilot Project Award for Cancer Research** (co-I; PI: G. Gan). *Small molecule enhances anti-cancer tumor radiosensitivity via activation of the cGAS-STING pathway.* \$ 10,000 direct cost to the Wang lab (January 1, 2023 – December 31, 2023).
6. **KU Frontiers IAMI Trailblazer Award** (Project leader; PI: M. Castro, UL1 TR002366). *Downregulation of interferon signaling by splicing modulators.* \$ **25,000** direct cost (July 1, 2022 – June 30, 2023).
7. **KU General Research Funds** (PI). *Development of antiviral RNA degrading chimeras.* \$ **22,000** direct cost (July 1, 2022 - June 30, 2023).

Completed Research Grants (selected)

1. **National Institute of Health (NIGMS) COBRE: Center for Molecular Analysis of Disease Pathways (CMADP) Research Project** (Project Leader; PI: S. Lunte, P20GM103638). *Novel target deconvolution in cGAS-STING pathway.* \$ **350,000** direct cost for the project (February 1, 2020 – June 30, 2022).
2. **Patton Trust Foundation Grant** (PI, KC 20-3). *Small molecule-oligonucleotide conjugate for the treatment of SMA with improved specificity.* \$ **50,000** direct cost (August 1, 2020 – September 30, 2021).

PUBLICATIONS

(Reverse chronological order; Note: # equal contribution, * corresponding author)

Independent publications at the University of Kansas

1. Structural and Biological Evaluations of a Non-Nucleoside STING Agonist Specific for Human STING-A230 Variants. Tang, Z.[#], Zhao, J.[#], Li, Y.[#], Tomer, S., Selvaraju, M., Tien, N., Sun, D., Johnson, D. K., Zhen, A.*[#], Li, P.*[#], **Wang, J.***. [bioRxiv Preprint](https://biorxiv.org/cgi/content/short/2023.07.02.547363v1): <https://biorxiv.org/cgi/content/short/2023.07.02.547363v1>
2. Chemical-guided SHAPE sequencing (cgSHAPE-seq) informs the binding site of RNA-degrading chimeras targeting SARS-CoV-2 5' untranslated region. Tang, Z.[#], Hegde, S.[#], Hao, S., Selvaraju, M., Qiu, J., **Wang, J.***. [bioRxiv Preprint](https://doi.org/10.1101/2023.04.03.535453): <https://doi.org/10.1101/2023.04.03.535453>
3. Cellular target deconvolution of small molecules using a selection-based genetic screening platform. (2022) [ACS Cent. Sci.](https://doi.org/10.1021/acscentsci.3c00112), 8(10):1424–1434. Zhao, J., Tang, Z.[#], Selvaraju, M.[#], Johnson K. A., Douglas, J., Gao, F., Petrassi, M., **Wang, J.*** [highlighted as issue cover]
4. CRISPR-mediated Enzyme Fragment Complementation Assay for Quantification of the Stability of Splice Isoforms. (2022) [ChemBioChem](https://doi.org/10.1002/cbic.202200012) 23(9):e202200012. Tang, Z.[#], Hegde, S.[#], Zhao, J.[#], Zhu, S., Lorson, C. L., Johnson K. A., **Wang, J.*** DOI: 10.1002/cbic.202200012.
5. Inhibition of SARS-CoV-2 by targeting conserved viral RNA structures and sequences. (2021) [Front. Chem.](https://doi.org/10.3389/fchem.2021.802766) 9:802766. Hegde S[#], Tang Z[#], Zhao J, **Wang J***. DOI: 10.3389/fchem.2021.802766. [review paper]
6. High throughput screening identifies inhibitors for parvovirus B19 infection of human erythroid progenitors. (2021) Ning K, Roy A, Cheng F, Xu P, Kleiboeker S, Escalante C, **Wang J**, and Qiu J*. [J. Virol.](https://doi.org/10.1128/JVI.01326-21) 96(2):e0132621. DOI: 10.1128/JVI.01326-21.
7. Recognition of single-stranded nucleic acids by small-molecule splicing modulators. (2021) [Nucleic Acids Res.](https://doi.org/10.1093/nar/gkab602) 49(14), 7870–83. Tang Z, Akhter S, Ramprasad A, Wang X, Reibarkh M, Wang J, Aryal S, Thota SS, Zhao J, Douglas JT, Gao P, Holmstrom ED, Miao Y*, **Wang J***. DOI: 10.1093/nar/gkab602.
8. RNA-Targeting Splicing Modifiers: Drug Development and Screening Assays. (2021) [Molecules](https://doi.org/10.3390/molecules26082263) 26(8), 2263. Tang Z, Zhao J, Pearson ZJ, Boskovic ZV, **Wang J***. DOI: 10.3390/molecules26082263 [review paper]
9. The RNA Architecture of the SARS-CoV-2 3'-Untranslated Region. (2020) [Viruses](https://doi.org/10.3390/v12121473) 12(12), 1473. Zhao J, Qiu J, Aryal S, Hackett JL, **Wang J***. DOI: 10.3390/v12121473.

Publications in undergraduate, graduate, and postdoc studies

10. Discovery of a potent GLUT inhibitor using rapafucin 3D microarrays. (2019) [Angew. Chem. Int. Ed.](https://doi.org/10.1002/anie.201908001) 58,17158–62. Guo ZF[#], Cheng Z[#], **Wang J[#]**, Liu W, Peng H, Wang Y, Rao AVS, Li RJ, Ying X, Korangath P, Liberti MV, Li Y, Xie Y, Hong SY, Schiene-Fischer C, Fischer G, Locasale JW, Sukumar S, Zhu H, Liu JO.
11. Rapafucins, rapamycin-inspired macrocycles with new target specificity. (2019) [Nat. Chem.](https://doi.org/10.1021/acschemlett.9b00011), 11(3):254-63. Guo ZF[#], Hong SY[#], **Wang J[#]**, Rehan S, Liu W, Peng H, Das M, Li W, Bhat S, Peiffer B, Ullman BR, Tse CM, Tarmakova Z, Schiene-Fischer C, Fischer G, Coe I, Paavilainen VO, Sun Z, Liu JO.
12. Using In Vitro and In-cell SHAPE to Investigate Small Molecule Induced Pre-mRNA Structural Changes. (2019) [J. Vis. Exp.](https://doi.org/10.1002/vis.143)(143), e59021. **Wang J**, Hammond J, Johnson KA.
13. Mechanistic studies of a small molecule modulator of SMN2 splicing, [PNAS](https://doi.org/10.1073/pnas.1800260115), 115(20): E4604-12. (2018) **Wang J**, Schultz PG, Johnson K. DOI: 10.1073/pnas.1800260115
14. Oligoribonuclease is the primary degradative enzyme for pGpG in *P. aeruginosa* that is required for cyclic-di-GMP turnover. [PNAS](https://doi.org/10.1073/pnas.1504857112) 112(36): E5048-57. (2015) Orr MW, Donaldson GP, Severin GB, **Wang J**, Sintim HO, Waters CM, Lee VT.
15. Essential roles of methionine and SAM in the autarkic lifestyle of *Mycobacterium tuberculosis*. [PNAS](https://doi.org/10.1073/pnas.150008112) 112(32): 10008-13. (2015) Berney M, Berney-Meyer L, Wong KW, Chen B, Chen M, Kim J, **Wang J**, Harris D, Parkhill J, Chan J, Wang F, Jacobs WR.

16. Octameric G8 c-di-GMP is an efficient peroxidase and this suggests that an open G-tetrad site can effectively enhance hemin peroxidation reactions. [RSC Adv. 3\(18\): 6305-10.](#) (2013) Roembke BT, **Wang J**, Nakayama S, Zhou J, Sintim HO.
17. Potent suppression of c-di-GMP synthesis via I-site allosteric inhibition of diguanylate cyclases with 2'-F-di-GMP, [Bioorg. Med. Chem. 21\(14\), 4396-404.](#) (2013) Zhou J, Watt S, **Wang J**, Nakayama S, Sayre DA, Lam YF, Lee VT, Sintim HO.
18. Selective binding of 2'-F-di-GMP to Ct-E88 and Cb-E43, new class I riboswitches from *C. tetani* and *C. botulinum* respectively. *Mol. BioSys.* 9(6): 1535-9. (2013) Luo Y, Zhou J, **Wang J**, Dayie K, Sintim HO.
19. Endo-S-di-GMP analogues-polymorphism and binding studies with class I riboswitch. *Molecule* 17(11): 13376-89. (2012). Zhou J, Sayre DA, **Wang J**, Pahadi N, Sintim HO.
20. Inhibitors of fatty acid synthesis in prokaryotes and eukaryotes as anti-infective, anticancer and anti-obesity drugs. [Future Med. Chem. 4\(9\):1113-51.](#) (2012) **Wang J**, Hudson R, Sintim HO.
21. Altering the communication networks of multispecies microbial systems using a diverse toolbox of AI-2 analogues. *ACS Chem. Biol.* 7(6): 1023-30. (2012) Gamby S, Roy V, Guo M, Smith JAI, **Wang J**, Stewart JE, Wang X, Bentley WE, Sintim HO.
22. Effects on membrane lateral pressure suggest permeation mechanisms for bacterial quorum signaling molecules. *Biochemistry* 50(32): 6983-93. (2011) Kamaraju K, Smith J, **Wang J**, Roy V, Sintim HO, Bentley WE, Sukharev S.
23. Conservative change to the phosphate moiety of cyclic diguanylic monophosphate remarkably affects its polymorphism and ability to bind DGC, PDE, and PilZ proteins. [J. Am. Chem. Soc. 133\(24\):9320-30.](#) (2011) **Wang J**, Zhou J, Donaldson GP, Nakayama S, Yan L, Lam YF, Lee VT, Sintim HO.
24. Differential radial capillary action of ligand assay for HTS detection of protein-metabolite interactions. [PNAS 108\(37\): 15528-33.](#) (2011) Roelofs KG, **Wang J**, Sintim HO, Lee VT.
25. DNA-based peroxidation catalyst—What is the exact role of topology on catalysis and is there a special binding site for catalysis? *Chem. Eur. J.* 17(20): 5691-8. (2011) Nakayama S, **Wang J**, Sintim HO.
26. Thiazole orange-induced c-di-GMP quadruplex formation facilitates a simple fluorescent detection of this ubiquitous biofilm regulating molecule. [J. Am. Chem. Soc. 133\(13\):4856-64.](#) (2011) Nakayama S, Kelsey I, **Wang J**, Roelofs K, Stefane B, Luo Y, Lee VT, Sintim HO.
27. C-di-GMP can form remarkably stable G-quadruplexes at physiological conditions in the presence of some planar intercalators. *Chem. Commun.* 47(16): 4766-8. (2011) Nakayama S, Kelsey I, **Wang J**, Sintim HO.
28. Dialkylamino-2,4-dihydroxybenzoic acids as easily synthesized analogues of platensimycin and platencin with comparable antibacterial properties. [Chem. Eur. J. 17\(12\):3352-7.](#) (2011) **Wang J** & Sintim HO.
29. Synthetic analogs tailor native AI-2 signaling across bacterial species. [J. Am. Chem. Soc. 132\(32\):11141-50.](#) (2010) Roy V, Smith JAI, **Wang J**, Stewart JE, Bentley WE, Sintim HO.
30. Remote C–H functionalization; using atom-economical tethers to switch between 1,5- and the rare 1,7-C–H insertions. [Angew. Chem. Int. Ed. 49\(23\):3964-8.](#) (2010) **Wang J**, Stefane B, Jaber D, Smith JA, Vickery C, Diop M, Sintim HO.
31. Paradigm shift in discovering next-generation anti-infective agents: targeting quorum sensing, c-di-GMP signaling and biofilm formation in bacteria with small molecules. [Future Med. Chem. 2\(6\):1005-35.](#) (2010) Sintim HO, Smith JAI, **Wang J**, Nakayama S, Yan L.
32. Efforts towards the identification of simpler platensimycin analogs, the total synthesis of oxazinidinyll platensimycin. [Chem. Eur. J. 15\(12\):2747-50.](#) (2009) **Wang J**, Lee VT, Sintim HO.
33. Biological screening of a diverse set of AI-2 analogues in *V. harveyi* suggests that receptors which are involved in synergistic agonism of AI-2 and analogues are promiscuous. [Chem. Commun. 45:7033-5.](#) (2009) Smith JAI, **Wang J**, Nguyen-Mau SM, Lee VT, Sintim HO.

34. A computationally designed Rh(I)-catalyzed two-component [5+2+1] cycloaddition of ene-vinylcyclopropanes and CO for the synthesis of cyclo-octenones. [J. Am. Chem. Soc. 129\(33\):10060-10061](#). (2007) Wang Y, **Wang J**, Su J, Huang F, Jiao L, Liang Y, Yang D, Zhang S, Wender PA, Yu ZX.

PATENTS

1. Liu JO, **Wang J**, Guo Z, Li W, Bhat S, Das M. (2012) Hybrid cyclic libraries and screens thereof. WO2012/075048.
2. Liu JO, **Wang J**, Sun Z, Hong S. (2017) Rapadocins, inhibitors of equilibrative nucleoside transporter 1 and uses thereof. WO2017/136717.
3. Liu JO, **Wang J**, Guo Z. (2017) Rapaglutins, novel inhibitors of GLUT and use thereof. WO2017/136731.

TEACHING EXPERIENCE

Course #	Program	Title	Semester/Year
MDCM 710	Graduate	Chemistry of Drug Action I	Fall 2020–2022
MDCM 790	Graduate	Chemistry of Drug Action II	Spring 2020–2023
MDCM 603	Pharm.D.	Medicinal Biochemistry II	Spring 2020–2023
MDCM 626	Pharm.D.	Medicinal Chemistry II: Homeostatic Agents	Spring 2021–2023

INVITED TALKS

1. University of South Florida. *CAPA Symposium* (Organizer: Jianmin Gao, Wenshe Liu). Tampa, FL. December 22, 2022.
2. University of Missouri at Kansas City (UMKC). *Comeback KC Showcase (Online)* (Organizer: Jill Meyer). Kansas City, MO. May 18, 2022.
3. Pittsburg State University, Department of Chemistry (Organizer: James McAfee). Pittsburg, KS. March 5, 2022.
4. University of Pusan, Korea. *Frontiers in Biological Chemistry, BK-BRL International Symposium (Online)* (Organizer: Minseob Koh). Pusan, Korea. February 16, 2022.
5. University of Nebraska Medical Center (Online). *MidWest Drug Development Conference* (Organizer: Matthew Boehm). Omaha, NE. October 4–5, 2021.
6. University of Kansas, Center for Computational Biology (Organizer: Yinglong Miao). Lawrence, KS. May 4, 2021.
7. University of Kansas Medical Center, Department of Molecular and Integrative Physiology (Organizer: John Stanford). Kansas City, KS. February 24, 2020.

AWARDS

- 2022 NIH Maximizing Investigators' Research Award (MIRA, R35)
 2022 W. M. Keck Foundation Grantee
 2019 KU New Faculty General Research Funding Award

PROFESSIONAL SOCIETY AND SERVICES

- 2022 NIH Peer Review Committee: Synthetic and Biological Chemistry B (SBCB) Study Section (Early Career Reviewer)
 2022 European Research Council (ERC) Advanced Grant Reviewer
 2020–present RNA Society, Member
 2009–present American Chemical Society, Member

JOURNAL EDITING/REVIEW

ACS Central Science, Chemical Sciences, ACS Synthetic Biology, Scientific Reports, Frontiers in Chemistry, Frontiers in Molecular Biosciences, Expert Opinion on Drug Discovery, Viruses, Tetrahedron

BOOK CHAPTER

Sintim HO & Wang J (2008) **e-EROS Encyclopedia of Reagents for Organic Synthesis**, Update on AlH₃ reactions; Update on BocN₃ reactions.