

# Jingxin Wang, Ph.D.

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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

- 2021–present Member at the University of Kansas Cancer Center, Kansas City  
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. **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).
4. **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).
3. **KU J. R. & Inez Jay Fund** (PI). *Mechanistic study of RNA-splicing modulation by small molecules.* \$ 22,000 direct cost (July 1, 2020 – June 30, 2021).
4. **KU General Research Funds** (PI). *Inhibition of influenza A virus by modulating RNA splicing of the matrix protein gene.* \$ 25,000 direct cost (June 14, 2020 - June 19, 2021).

## PUBLICATIONS

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

### *Independent publications at the University of Kansas*

1. Cellular target deconvolution of small molecules using a selection-based genetic screening platform. (Submitted to ACS Cent. Sci., minor revision) Zhao, J., Tang, Z.<sup>#</sup>, Selvaraju, M.<sup>#</sup>, Johnson K. A., Douglas, J., Gao, F., Petrassi, M., **Wang, J.\***
2. CRISPR-mediated Enzyme Fragment Complementation Assay for Quantification of the Stability of Splice Isoforms. (2022) [ChemBioChem](#). e202200012. Tang, Z.<sup>#</sup>, Hegde, S.<sup>#</sup>, Zhao, J.<sup>#</sup>, Zhu, S., Lorson, C. L., Johnson K. A., **Wang, J.\*** DOI: 10.1002/cbic.202200012.
3. Inhibition of SARS-CoV-2 by targeting conserved viral RNA structures and sequences. (2021) [Front. Chem.](#) 9, 802766. Hegde S<sup>#</sup>, Tang Z<sup>#</sup>, Zhao J, **Wang J\***. DOI: 10.3389/fchem.2021.802766.
4. 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.](#) JVI0132621. DOI: 10.1128/JVI.01326-21.
5. Recognition of single-stranded nucleic acids by small-molecule splicing modulators. (2021) [Nucleic Acids Res.](#) 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.
6. RNA-Targeting Splicing Modifiers: Drug Development and Screening Assays. (2021) [Molecules](#) 26(8), 2263. Tang Z, Zhao J, Pearson ZJ, Boskovic ZV, **Wang J\***. DOI: 10.3390/molecules26082263
7. The RNA Architecture of the SARS-CoV-2 3'-Untranslated Region. (2020) [Viruses](#) 12(12), 1473. Zhao J, Qiu J, Aryal S, Hackett JL, **Wang J\***. DOI: 10.3390/v12121473.

### *Publications in undergraduate, graduate, and postdoc studies*

8. Discovery of a potent GLUT inhibitor using rapafucin 3D microarrays. (2019) [Angew. Chem. Int. Ed.](#) 58,17158–62. Guo ZF<sup>#</sup>, Cheng Z<sup>#</sup>, **Wang J<sup>#</sup>**, 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.
9. Rapafucins, rapamycin-inspired macrocycles with new target specificity. (2019) [Nat. Chem.](#),11(3):254-63. Guo ZF<sup>#</sup>, Hong SY<sup>#</sup>, **Wang J<sup>#</sup>**, 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.
10. Using In Vitro and In-cell SHAPE to Investigate Small Molecule Induced Pre-mRNA Structural Changes. (2019) J. Vis. Exp.(143), e59021. **Wang J**, Hammond J, Johnson KA.
11. Mechanistic studies of a small molecule modulator of SMN2 splicing, [PNAS](#), 115(20): E4604-12. (2018) **Wang J**, Schultz PG, Johnson K. DOI: 10.1073/pnas.1800260115
12. Oligoribonuclease is the primary degradative enzyme for pGpG in P. aeruginosa that is required for cyclic-di-GMP turnover. PNAS 112(36): E5048-57. (2015) Orr MW, Donaldson GP, Severin GB, **Wang J**, Sintim HO, Waters CM, Lee VT.
13. Essential roles of methionine and SAM in the autarkic lifestyle of Mycobacterium tuberculosis. PNAS 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.
14. 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.
15. 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.
16. 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.

17. 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.
18. 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.
19. 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.
20. 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.
21. 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\(24\):9320-90. \(2011\)](#) **Wang J**, Zhou J, Donaldson GP, Nakayama S, Yan L, Lam YF, Lee VT, Sintim HO.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. Efforts towards the identification of simpler platensimycin analogs, the total synthesis of oxazinidinyl platensimycin. [Chem. Eur. J. 15\(12\):2747-50. \(2009\)](#) **Wang J**, Lee VT, Sintim HO.
31. 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.
32. 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	% Taught
MDCM 710	Graduate	Chemistry of Drug Action I	Fall 2020–2021	15
MDCM 790	Graduate	Chemistry of Drug Action II	Spring 2020–2022	20
MDCM 603	Pharm.D.	Medicinal Biochemistry II	Spring 2020–2022	33
MDCM 626	Pharm.D.	Medicinal Chemistry II: Homeostatic Agents	Spring 2021–2022	15

## INVITED TALKS

1. **Wang, J.** (2022) **Invited Talk:** New RNA-targeting Approach to Combat Viruses. *Comeback KC Showcase* (Organizer: Jill Meyer). University of Missouri at Kansas City (UMKC), MO. May 18, 2022.
2. **Wang, J.** (2022) **Invited Talk:** Regulating Gene Expression by using Splicing Modulators. Pittsburg State University, Department of Chemistry (Organizer: James McAfee). Pittsburg, KS. March 5, 2022
3. **Wang, J.** (2022) **Invited Talk:** Regulating Gene Expression by using Splicing Modulators. *Frontiers in Biological Chemistry, BK-BRL International Symposium* (Organizer: Minseob Koh). University of Pusan, Korea (Online). February 16, 2022
4. **Wang, J.** (2021) **Invited Talk:** Antiviral Compounds Against SARS-CoV-2. *Whiteboard2Boardroom Technology Snapshots and Webinars* (Organizer: James Baxendale). University of Missouri at Kansas City (UMKC), MO (Online). December 9, 2021
5. **Wang, J.** (2021) **Invited Talk:** Antiviral Compounds Against SARS-CoV-2. *MidWest Drug Development Conference* (Organizer: Matthew Boehm). University of Nebraska Medical Center, NE (Online). October 4–5, 2021
6. **Wang, J.** (2021) **Invited Talk:** Modulating RNA Splicing by Small Molecules. KU Center for Computational Biology (Organizer: Yinglong Miao). Lawrence, KS (Online). May 4, 2021.
7. **Wang, J.** (2020). **Invited Talk:** Mechanistic studies of small-molecule modulators in gene splicing. University of Kansas Medical Center, Department of Molecular & Integrative Physiology (Organizer: John Stanford). Kansas City, KS. February 24, 2020.

## AWARDS

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

## PROFESSIONAL SOCIETY AND SERVICES

- 2022 National Institute of Health, Early Career Reviewer (SBCB study section)  
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 AlH<sub>3</sub> reactions; Update on BocN<sub>3</sub> reactions.