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Education

Ph.D., Biochemistry, University of Wisconsin-Madison, 2002.
M.S., Computer Sciences, University of Wisconsin-Madison, 2001.
M.S., Molecular Biology, Institute of Biophysics, Chinese Academy of Sciences, China, 1997.
B.S., Chemical Physics, University of Science and Technology of China, China, 1994.

Professional Experience

2020–	Professor, Department of Biochemistry, University of California, Riverside.
2017–2020	Associate Professor, Department of Biochemistry, University of California, Riverside.
2012–2017	Assistant Professor, Department of Biochemistry, University of California, Riverside.
2007–2011	Senior Scientist (2010-2011)/Research Associate (2007-2010), Structural Biology Program, Memorial Sloan-Kettering Cancer Center. New York. "Investigation of molecular mechanisms underlying epigenetic regulation".
2002–2007	Assistant Researcher, NMR Team Leader (2005-2007), Center for Eukaryotic Structural Genomics, University of Wisconsin, Madison.
1997–2002	Research Assistant, Department of Biochemistry, University of Wisconsin, Madison.
1994–1997	Research Assistant, Institute of Biophysics, Chinese Academy of Sciences. Beijing, China.

Awards

2013-2015	Basil O'Connor Starter Scholar Research Award, March of Dimes Foundation
2013	Robert T. Poe Faculty Development Grant, Chinese American Faculty Association of Southern California
2013-2014	Regents' Faculty Fellowship, University of California, Riverside
2014-2015	Hellman Fellowship, Hellman Family Foundation
2015-2017	Kimmel Scholar, Sidney Kimmel Foundation for Cancer Research

Scientific Publications **(H index 47)**

(https://www.ncbi.nlm.nih.gov/myncbi/1-UWaaB0j7OQG/bibliography/public/)

(* These authors have contributed equally to this work; #Corresponding authors)

Institute of Biophysics, Chinese of Academy of Sciences: 1994-1997

1. **Song J,** Dai J, Jing G, Wang J. Study on Folding of N-Terminal Fragments of SnaseR. ***Acta Biophysica Sinica*** 1997, 13(4):545-550.

University of Wisconsin-Madison: 1997-2007

2. Qasim MA, Lu SM, Ding J, Bateman KS, James MN, Anderson S, **Song J**, Markley JL, Ganz PJ, Saunders CW, Laskowski M Jr. Thermodynamic criterion for the conformation of P1 residues of substrates and of inhibitors in complexes with serine proteinases. ***Biochemistry.***1999, 38(22):7142-50.
3. Hemmi H, Studts, JM, Chae YK, **Song J**, Markley JL, Fox BG. Solution structure of the toluene 4-monooxygenase effector protein (T4moD). ***Biochemistry.*** 2001, 40(12):3512-24.
4. **Song J**, Markley J.L. NMR chemical shift mapping of the binding site of a protein proteinase inhibitor: changes in the (1)H, (13)C and (15)N NMR chemical shifts of turkey ovomucoid third domain upon binding to bovine chymotrypsin A(alpha). ***J Mol Recognit.*** 2001, 14(3):166-71.
5. **Song J**, Laskowski M Jr, Qasim MA., Markley JL. NMR Determination of pK_a Values for Asp, Glu, His, and Lys Mutants at each Variable Contiguous Enzyme-Inhibitor Contact Position of Turkey Ovomucoid Third Domain. ***Biochemistry.*** 2003, 42(10):2847-2856.
6. **Song J**, Markley JL. Protein Inhibitors of Serine Proteinases: Role of Backbone Structure and Dynamics in Controlling the Hydrolysis Constant. ***Biochemistry***. 2003, 42(18):5186-5194.
7. **Song J**, Qasim MA, Laskowski M Jr., Markley JL. Two Conformational States of Turkey Ovomucoid at Low pH: Three-Dimensional Structures, Internal Dynamics, and Interconversion Kinetics and Thermodynamics. ***Biochemistry.*** 2003, 42(21):6380-6391.
8. **Song J**, Vinarov, DA, Tyler EM, Shahan MN, Tyler RC, and Markley, JL Hypothetical Protein At2g24940.1 from *Arabidopsis thaliana* Adopts a Cytochrome b5 like Fold. ***J Biomol NMR.*** 2004, 30(2):215-8.
9. **Song J**, Zhao Q, Thao S, Friederick, RO, and Markley JL. Solution Structure of a Calmodulin-Like Calcium-Binding Domain from *Arabidopsis thaliana*. ***J Biomol NMR.*** 2004, 30(4):451-6.
10. Tyler RC, Aceti DJ, Bingman CA, Cornilescu CC, Fox BG, Frederick RO, Jeon WB, Lee MS, Newman CS, Peterson FC, Phillips GN Jr, Shahan MN, Singh S, **Song J**, Sreenath HK, Tyler EM, Ulrich EL, Vinarov DA, Vojtik FC, Volkman BF, Wrobel RL, Zhao Q, Markley JL. Comparison of cell-based and cell-free protocols for producing target proteins from the Arabidopsis thaliana genome for structural studies. ***Proteins.*** 2005, 59(3):633-43.
11. Fox BG, Malone TE, Johnson KA, Madson SE, Aceti D, Bingman CA, Blommel PG, Buchan B, Burns B, Cao J, Cornilescu C, Doreleijers J, Ellefson J, Frederick R, Geetha H, Hruby D, Jeon WB, Kimball T, Kunert J, Markley JL, Newman C, Olson A, Peterson FC, Phillips GN Jr, Primm J, Ramirez B, Rosenberg NS, Runnels M, Seder K, Shaw J, Smith DW, Sreenath H, **Song J**, Sussman MR, Thao S, Troestler D, Tyler E, Tyler R, Ulrich E, Vinarov D, Vojtik F, Volkman BF, Wesenberg G, Wrobel RL, Zhang J, Zhao Q, Zolnai Z. X-ray structure of Arabidopsis At1g77680, 12-oxophytodienoate reductase isoform 1. ***Proteins.*** 2005, 61(1):206-8.

12. Zhao Q, **Song J**, Jin Z, Danilova V, Hellekant G, Markley JL. Probing the sweet determinants of brazzein: wild type brazzein and a tasteless variant, brazzein-ins(R18a-I18b), exhibit different pH-dependent NMR chemical shifts. ***Biochem Biophys Res Commun.*** 2005, 335(1):256-263.
13. **Song J**, Zhao Q, Lee MS, Markley JL. ^{1}H, ^{15}N and ^{13}C resonance assignments of the putative Bet v 1 family protein At1g24000.1 from *Arabidopsis thaliana.* ***J Biomol NMR.*** 2005, 32(4):335.
14. **Song J**, Tyler RC, Wrobel RL, Frederick RO, Vojtek FC, Jeon WB, Lee MS, Markley JL. Solution structure of At3g04780.1-des15, an *Arabidopsis thaliana* ortholog of the C-terminal domain of human thioredoxin like protein. ***Protein Sci.*** 2005, 14(4):1059-63.
15. **Song J**, Tyler RC, Lee MS, Tyler EM, Markley JL. Solution structure of isoform 1 of Roadblock/LC7, a light chain in the dynein complex. ***J Mol Biol.*** 2005, 354(5):1043-1051.
16. Lin I, Chen Y, Fee, JA, **Song J**, Westler WM, Markley JL. Rieske protein from *Thermus thermophilus*: ^{15}N NMR titration study demonstrates the role of ion-ligated histidines in the pH dependence of the reduction potential. ***J Am Chem Soc.*** 2006, 128(33):10672-10673.
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University of California, Riverside: 2012-

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91. Lu J, Chen X, Fang J, Li D, Le H, Zhong X, **Song J**[#]. Structure and autoinhibitory regulation of MET1 in the maintenance of plant CG methylation. *The Plant Cell* 2025. 37 (11), koaf246.
92. Starble RM, Sun EG, Gbyli R, Radda J, Lu J, Jensen TB, Sun N, Khudaverdyan N, Zhao T, Hu B, Melnick MA, Zhao S, Roper N, Wang GG, Tackett AJ, Wang Y, Song J, Politi K, Wang S, Xiao AZ. Epigenetic priming promotes tyrosine kinase inhibitor resistance and oncogene amplification. *Nat Struct & Mol Biol* 2026. 33*(1): 7-19.
93. Lu J, Vig E, Chen J, Gretarsson KH, Khudaverdyan N, Shao Z, Lu C, Chang CA, **Song J**[#]. Structural insight into hierarchical DNMT3A autoinhibition and its dysregulation in disease. *Nat Commun*. 2026. 17, 2901.
94. Chen J, Lu J, Long Z, Yoon S, Fukunaga M, **Song J**[#]. Multidomain interaction governs the filamentous assembly of the dominant-negative DNMT3A R882H mutant. Proc Natl Acad Sci USA. 2026. *In press*.
95. Kim A, Pan B, Yu X, Gao X, Khudaverdyan N, Taherian F, Xu C, Zhong H, Xiong Y, Kaniskan H, Vedadi M, **Song J**, Jin J, Cai L, Wang GG. An EZH2-SREBP2 axis promotes cholesterol biosynthesis and represents a noncanonical vulnerability in tumorigenesis. Nat Cell Biol. 2026. *In press*.

Review Article

1. **Song J**[#], Pfeifer GP[#]. Are there specific readers of oxidized 5-methylcytosine bases? *BioEssays*. 2016; 38(10):1038-1047.
2. Wang B, Thurmond S, Hai R[#], **Song J**[#]. Structure and function of Zika virus NS5 protein: perspectives for drug design. *Cell Mol Life Sci.* 2018; 75: 1723-1736.
3. Ren W, Gao L, **Song J**[#]. Structural Basis of DNMT1- and DNMT3A-Mediated DNA Methylation. *Genes*. 2018; 9(12), 620.
4. Thurmond S, Wang B, **Song J**[#], Hai R[#]. Suppression of Type I Interferon Signaling by Flavivirus NS5. *Viruses*. 2018; 10(12):712.
5. Pfeifer GP, Szabó PE and **Song J**. Protein interactions at oxidized 5-methylcytosine bases. *J. Mol. Biol.* 2020; 432(6):1718-1730.
6. **Song J**. A role of protein conformational dynamics in mammalian DNA methylation. *Struct. Dyn*. 2026; 13, 021302.

Book Chapter

1. Wrobel RL, Bingman CA, Jeon WB, **Song J**, Vinarov DA, Frederick RO, Aceti DJ, Sreenath HK, Zolnai Z, Vojtik FC, Fox BG, Phillips GN Jr., and Markley JL. (2006) Structural Proteomics. *Plant Proteomics*, 99-128. Blackwell Publishing, Oxford.
2. Tajima S[#], Suetake I, Takeshita K, Nakagawa A, Kimura H, **Song J**[#]. Domain Structure of the Dnmt1, Dnmt3a, and Dnmt3b DNA Methyltransferases. Adv Exp Med Biol. 2022; 1389:45-68.

Presentations

Meeting presentations (2012-):

2/2026 TBRS Virtual Scientific Meeting. Structural insight into the functional regulation of DNMT3A in development and disease

12/2025 Pacifichem 2025. Structure and mechanism of DNA methylation on chromatin

10/2025 Epigenetic Society 2nd International Conference. Structural insight into the allosteric regulation of DNMT3A in development and disease

10/2025 Neurospora 2025. Mechanism for the crosstalk between heterochromatin and DNA methylation

07/2024 TSRC workshop: Epigenetic Mechanisms. Mechanism of Heterochromatin-guided DNA methylation

06/2023 Histone and DNA Modifications Gordon Conference. Suppress the dominant-negative effect of DNMT3A mutants in leukemogenesis

07/2022 TSRC workshop: Epigenetic Mechanisms. Structural basis for the dynamic assembly of DNMT3B

06/2022 Biophysical Society, Stochastic dynamics and physics of protein-DNA interactions. The role of substrate deformation in context-dependent non-CG DNA methylation.

04/2022 ASBMB Annual Conference. The role of substrate deformation in context-dependent non-CG DNA methylation.

11/2021 EpiCypher 2021. Biological and Clinical Frontiers in Epigenetics. What makes DNMT3A R882 a mutational hotspot in human diseases?

08/2021 Nucleic Acids 2021, Webnar. The DRM2-DNA interaction links DNA deformation to context-dependent methylation

11/2020 TBRS Community Collaborative Research Network Conference: DNMT3A-mediated DNA methylation in health and disease: a structural perspective.

02/2020 Keystone symposium in Cancer Epigenetics: New Mechanisms and Therapeutic Opportunities. Structural studies of DNA methylation and links to human cancer.

09/2019 Van Andel Symposium on Structural Biology. Mammalian DNA methylation in health and disease: a structural perspective.

02/2019 Mesilla Chemistry Workshop: Protein-Nucleic Acid Interactions. Messila, New Mexico. “Mammalian DNA Methylation: How Is The Fifth Base Established and Maintained?”.

12/2018 IV International Conference on Drug Discovery, Development and Lead Optimization. San Francisco, CA. “Perspectives for Zika Virus NS5 Protein as a Drug Target”.

04/2017 American Society for Biochemistry and Molecular Biology annual conference. Chicago, IL. “Allosteric regulation and enzymatic mechanism of YopJ family of bacterial effectors”.

07/2016 The Protein Society 30th anniversary symposium, Baltimore, MD. “Tet3 CXXC domain is an epigenetic reader for 5-carboxylcytosine”.

02/2016 Abcam west coast epigenetics day, University of California, Irvine, CA. “Identification of the Tet3 CXXC domain as an epigenetic reader for 5-carboxylcytosine”.

Invited seminars (2012-):

04/2025 University of California, Irvine. "Mechanistic understanding of DNA methylation in developing and disease".

05/2024 University of California, Riverside. "Structure and mechanism of heterochromatin-regulated DNA methylation".

03/2022 Purdue University, West Lafayette (Remote). "Structural Studies in DNA Methylation and Links to Human Disease".

09/2020 Ohio State University, Columbus (Remote). "Mammalian DNA Methylation: Structure, Mechanism and Disease Implications".

10/2018 University of Southern California, Los Angeles. "Mechanistic Basis of Mammalian DNA Methylation".

10/2018 University of Wisconsin, Madison. "Mechanistic Basis of Mammalian DNA Methylation".

05/2018 University of Science and Technology of China, Hefei, China. "Mechanistic Basis of Mammalian DNA Methylation".

04/2017 University of Utah, Salt Lake City, AZ. "Mechanistic Basis of Mammalian DNA Methylation".

12/2016 University of Arizona, Tucson, AZ. "Mechanistic Basis of Mammalian DNA Methylation".

12/2016 University of Southern California, Los Angeles, CA. "Mechanistic Basis of Mammalian DNA Methylation".

11/2016 University of California, Irvine, CA. "Mechanistic Basis of Mammalian DNA Methylation".

09/2016 University of California, San Diego, CA. "Mechanistic Basis of Mammalian DNA Methylation".

06/2016 University of Wisconsin, Madison, WI. "Mammalian DNA methylation: how is it maintained?".

05/2016 University of North Carolina, Chapel Hills, NC. "Mechanistic Basis of Mammalian DNA Methylation".

05/2016 Sanford Burnham Prebys Medical Discovery Institute, San Diego, CA. "Mechanistic basis of dynamic DNA Methylation".

11/2014 University of California, Riverside, CA. "Multifaceted regulation in DNMT1-mediated maintenance DNA methylation"

11/2013 University of California, Riverside, CA. "Dynamic DNA Methylation: Structure and Mechanism"

09/2012 City of Hope, CA. "DNMT1 and Maintenance DNA methylation: A Structural Perspective".

Reviewer for Professional Journals

Nature, Nature Communications, Cell Reports, Science Advance, Proceedings of the National Academic of Sciences; Cell Chemical Biology, Biochemistry; PLoS Pathology; Molecular Plant; Journal of the American Chemical Society; PLoS One; Nucleic Acids Research; Scientific Reports; Genes; Structure; Communications Biology; Protein & Cell; Epigenetics & Chromatin.

Reviewer for Grant Proposals

2016	Ad hoc reviewer for The Center for the Advancement of Science in Space
2016	Ad hoc reviewer for Breast Cancer Now
2018,2024	Ad hoc reviewer for French National Research Agency (ANR)
2020-2023	Ad hoc reviewer for NSF Genetic Mechanisms
2019-2021	Ad hoc reviewer for NIH Director's Pioneer Award
2021	Ad hoc reviewer for Research Grants Council (RGC) of Hong Kong
2022-2023	Ad hoc reviewer for NIH ZRG1 MGG-C (55) R
2023	Ad hoc reviewer for Medical Research Council, UK
2024	Ad hoc reviewer for ALS, Lawrence Berkeley National Lab
2020-2023	Member of California Cancer Research Committee
2025	Ad hoc reviewer for NIH MRAF study section
2026-	Member of California Cancer Research Postdoc Fellowship Committee

Editorial Bard

2025	Epigenetics & Chromatin

Scientific Society

2016-	Member, American Society for Biochemistry and Molecular Biology
2020-	Member, American Association for the Advancement of Science
2022-	Board Member, Epigenetic Society

Mentoring

Postdoctoral Research Associates/Project Scientist

Zhi-Min Zhang	2012-2017
Wei Zhang	2013-2014
Xiao-Feng Tan	2015-2017
Wendan Ren	2017-2020
Jiuwei Lu	2017-
Jian Fang	2017-

Graduate Students

Matthew R. Harter (M.S.)	2012-2016
Linfeng Gao (Ph.D.)	2015-2020
Boxiao Wang (Ph.D.)	2015-2020
Hiwot Anteneh (Ph.D.)	2017-2021
Mahamaya Biswal (Ph.D.)	2017-2022
Genevieve Herle (Ph.D.)	2021-2025
Xinyi Chen (Ph.D.)	2021-2026
Zengyu Shao (Ph.D.)	2021-2026
Jianbin Chen (Ph.D.)	2021-2026
Nelli Khudaverdyan (Ph.D.)	2021-
Daniel Li (Ph.D.)	2024-

Sol Yoon (M.S.)	2024-
Zhixu Long (Ph.D.)	2025-
Megan Fukunaga (Ph.D.)	2025-

Undergraduate Students

Lei Phyu	2012-2013
Ethan Chan	2012-2013
Steven Ung	2013
Krystal Lin	2013-2014
Ying-Yueh Lee	2013-2014
Barbara Huynh	2013-2014
Vanessa Yang	2014
Jennifer Clark	2014
Erica Gutierrez	2014
Jessica Nunes	2015
Kelly J. Brown	2014-2015
Righteous Richards	2015
Isaac Lin	2015-2017
Linhui Li	2015-2017
Tammy Nguyen	2018
Troy Mengjiang Huang	2018-2019
Pranav Athavale	2023-2026
Brian David	2024-2025
Jinrui Zhang	2026-

Rotation Students

2012 Randy Wilson, PhD program
2013 Lin Shao, PhD program
2014 Dylan Riggs, PhD program
2016 Alison Mills, PhD program
2019 Sheron Hakopian, PhD program
2022 Pratyasha Mishra, PhD program
2023 Kelly Britton, PhD program
2025 Yingying He, PhD program

University or Departmental Administrative Services

Epigenetics Faculty Search Committee	2012-2013
Marc U Program Admission Committee	2014-2015
ETOX Curriculum and Student Affairs Committee	2015-2016
Epigenetics Faculty Search Committee	2015-2016
ETOX Cluster Hire Faculty Search Committee	2015-2016
Epigenetics Faculty Search Committee	2016-2017
Cryo-EM Faculty Search Committee (chair)	2017-2018
Cryo-EM Faculty Search Committee	2018-2019
Faculty Search Committee (chair)	2022-2023

Faculty Search Committee (chair)	2024-2025
BMCB Graduate Admission Committee	2013-
Radiation Safety Committee	2017-
Vice Chair of Biochemistry Department	2018-2019, 2023-2026
Graduate Advisor for enrolled students	2019-2026
Chair of Biochemistry Department	2026-