XINRU WANG, Ph.D.

University of Washington | xinruw7@uw.edu

I am a Postdoctoral Fellow at the Baker Lab which is part of the University of Washington Institute for Protein Design. My research interests lie in the application of machine learning based protein design in biomedical research. I am currently working on development of protein agonists to specifically regulated insulin receptor and BMP signaling.

EDUCATION

Ph.D. in Molecular Biology, Cell Biology and Biochemistry, Brown University, Providence, RI 08/2014-05/2019
B.S. in Molecular Biology and Biochemistry, minor in Mathematics**,** University at Albany, Albany, NY 08/2011-05/2014

PROFESSIONAL POSITIONS

Postdoctoral Researcher, Baker Lab, University of Washington, Seattle, WA 05/2020-Present
• Develop novo protein-agonists to regulate disease-relevant pathways.
• Develop and improve high-throughput assays to screen protein-protein interactions
Co-founder and advisor, Lila Biologics, Seattle, WA 08/2022-Present
• Advise on protein design and disease-related pathways.
Postdoctoral Researcher, Page Lab, University of Arizona, Tucson, AZ 07/2019-03/2020
• Expand the PP2A substrate specificity study to PP2A-B55 through solution NMR.
Graduate Student, Page Lab, Brown University, Providence, RI 09/2014-05/2019
• Investigate the mechanism of substrate specificities of various ser/threonine phosphatases including PP1, PP2A-B56, and Calcineurin by crystallography and solution NMR.
Undergraduate Researcher, Cady Lab, College of Nanoscale Science and Engineering, Albany, NY 08/2013-05/2014
• Identified quorum sensing inhibitors to limit bacteria attachment to medical devices.

HONORS AND AWARDS

Leading Edge Fellow, Leading Edge Program **2024**
Foresight Institute Fellow，Foresight Institute 2023
Best Team Proposal, Foresight Designing Molecular Machines Workshop, San Francisco, CA 07/2022
The Melvin P. Klein Scientific Development Award, SSRL, San Francisco, CA 08/2019
Thesis Award, Brown University MCB Program Barry Jay Rosen Memorial Award, Providence, RI 05/2019
Travel Award, American Society of Biochemistry and Molecular Biology 04/2018
Travel Award, Brown University BioMed Graduate Program, Providence, RI 04/2018
Travel Award, Brown University BioMed Graduate Program, Providence, RI 07/2016
Spellman Achievement Awards for Academic Excellence, University at Albany, Albany, NY 05/2014

SELECTED ORAL PRESENTATIONS

Chemical Biology and Physiology 2023, Portland, OR 12/2023
Title: Control Cell Signaling Pathways Using Designed De Novo Protein Binders
Biophysical Society Annual Meeting, San Diego, CA 02/2023
Title: Design De Novo BMP mimics
Foresight Designing Molecular Machines Workshop, San Francisco, CA 07/2022
Title: Design Receptor Binding Proteins
RosettaCON 2021, Virtual 08/2021
Title: Switch Insulin Receptor & Its Related Receptors Cell Signaling Pathways
2019 SSRL/LCLS Users' Meeting, Menlo Park, CA 09/2019
Title: Protein Ser/Thr Phosphatase Substrate Recognition
West Coast Structural Biology Workshop, Pacific Grove, CA 03/2019
Title: Understanding ser/thr phosphatase substrate specificity

PUBLICATIONS

#Co-first author

5. Huang B, Abedi M, Ahn G, Coventry B, Sappington I, Wang R, Schlichthaerle T, Zhang JZ, Wang Y, Goreshnik I, Chiu CW, Chazin-Gray A, Chan S, Gerben S, Murray A, Wang S, O'Neill J, Yeh R, Misquith A, Wolf A, Tomasovic LM, Piraner DI, Gonzalez MJD, Bennett NR, Venkatesh P, Satoe D, Ahlrichs M, Dobbins C, Yang W, **Wang X**, Vafeados D, Mout R, Shivaei S, Cao L, Carter L, Stewart L, Spangler JB, Bernardes GJL, Roybal KT, Greisen P Jr, Li X, Bertozzi C, Baker D. Designed Endocytosis-Triggering Proteins mediate Targeted Degradation. bioRxiv [Preprint]. 2023 Sep 20:2023.08.19.553321. doi: 10.1101/2023.08.19.553321. PMID: 37781607; PMCID: PMC10541094. *Submitted*

4. Fowle H, Zhao Z, Xu Q**,** Wasserman JS, **Wang X**, Adeyemi M, Feiser F, Kurimchak A, Atar D, McEwan BC, Kettenbach AN, Page R, Peti W, Dunbrack RL, Graña X (2021) PP2A/B55α substrate recruitment as defined by the retinoblastoma-related protein p107. *eLife* 2021;10:e63181, https://doi.org/10.7554/eLife.63181

3. **Wang X#**, Garvanska DH#, Nasa I, Ueki Y, Zhang G, Kettenbach AN, Peti W, Nilsson J, Page R (2020) A dynamic charge-charge interaction modulates PP2A: B56 substrate recruitment. *eLife 2*020;9:e55966, https://doi.org/10.7554/eLife.55966

2. **Wang X**#, Altenburger R#, Sjøgaard-Frich LM, Sheftic SR, Page R, Bendsøe AH, Kragelund BB, Pedersen SF, Peti W (2019). Molecular basis for the binding and selective dephosphorylation of Na+/H+ exchanger 1 by calcineurin. *Nature Communications,* 10(1), 3489.

1. **Wang X**, Bajaj R, Bollen M, Peti W, Page R (2016). Expanding the PP2A interactome by defining a B56- specific SLiM. *Structure*, 24: 2174-2181.

Manuscripts in preparation

1. **Wang X**#, Guillem-Marti J#, Kumar S, Lee D, Alamo KAE, Werther R, Zhao YT, Nguyen A, Kopyeva I, Huang B, Li J, Hao Y, Roy A, DeForest CA, Springer T, Ruohola-Baker H, Cooper J, Campbell MG, Manero JM, Ginebra M-P, Baker D. De novo design of highly specific integrin alpha 5 beta 1 modulators.

2. **Wang X#**, Cardoso SA, Cai K, Li J, Chen S, Xiaochen Bai, Choi E, Baker D. Rational design of insulin receptor agonists using de novo protein design.

Patent

Wang X, Guillem-Marti J, Huang Buwei, David Baker (2023) De Novo Designed alpha (5) beta (1) Integrin selective minibinders, UW Reference: 49537.01US1,05-15-2023 (provisional filing)

SELECTED TEACHING AND BROADER IMPACTS

Co-chair, Platform: Protein Structure, Prediction, and Design Biophysical Society Annual Meeting, San Diego, CA	03/2022
Instructor, Undergraduate Research Program (JUPITER) Institute for Protein Design, University of Washington,	01/2022 – Present
Session moderator, UW Undergraduate Research Symposium, University of Washington, WA	05/2021, 08/2021
Reviewer, Sigma Xi's Grant in Aid of Research program, Raleigh, NC	12/2019, 05/2020
Teaching Assistant, Introduction to Biochemistry, Brown University, Providence, RI	01/2016-05/2016
Peer Mentor Panelist, International Graduate Student Orientation, Brown University, Providence, RI	09/2015
Group Tutor (chemistry), State University of New York State at Albany, Albany, NY	01/2012-05/2014

PUBLIC DATA DISTRIBUTION

The Protein Data Bank (PDB): 5K6S, 5SWF, 5SW9, 6NUC, 6NUF, 6NUU, 6OYL, 6VRO
The Biological Magnetic Resonance Data Bank (BMRB): 27913, 51881

POSTER PRESENTATIONS

Chemical Biology and Physiology 2023, Portland, OR 12/2023
Title: Control Cell Signaling Pathways Using Designed De Novo Protein Binders
Winter RosettaCON 2022, virtual 02/2022
RosettaCON 2021, virtual 08/2021
Title: Switch Insulin Receptor & Its Related Receptors Cell Signaling Pathways Using Designed Mini-protein Binders
Experimental Biology 2018, San Diego, CA 03/2018
Title: Decoding the PP2A substrate specificity: identification of PP2A-B56 specific SLiMs
Molecular Biology, Cell Biology and Biochemistry 29th Annual Retreat, Brown University, Providence, RI 08/2018
Title: Transcription regulation driven by PNUTS-TOX4
FASEB Science Research Conference: Protein Phosphatase, Steamboat Springs, CO 03/2018
Title: Expanding the PP2A interactome by defining a B56-specific SLiM, from 3 different PP2A-B56: regulator structures
Sailing the Protein Seas in the Ocean State, Providence, RI 10/2016
Title: Make PP2A druggable: identification of a novel short linear motif binding site on PP2AB56
12th Annual North Eastern Structure Symposium, Storrs, CT 10/2015
Title: The metallic 'glue' that determines the folding and function of MqsA