CURRICULUM VITAE

WEI LIU

Arizona State University
School of Molecular Sciences
Biodesign Center for Applied Structural Discovery, Biodesign Institute
Tempe, AZ 85287-1604

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EDUCATION

2007 Ph.D., The Ohio State University, Columbus, Ohio
Major: Biophysics
Dissertation advisor: Martin Caffrey
Dissertation title: Membrane Protein Crystallization in the Lipid Cubic Phase: Testing Hypotheses Relating to Reconstitution

2002 B.S., Wuhan University, China
Major: Pharmacology

EMPLOYMENT

2015–**present** **Assistant Professor**
School of Molecular Sciences (formerly Dept. of Chemistry and Biochemistry)
Biodesign Center for Applied Structural Discovery, Biodesign Institute
Arizona State University, Tempe, Arizona

2011–2014 **Staff Scientist**
Department of Molecular Biology
The Scripps Research Institute, La Jolla, CA

2009–2011 **Scientific Associate** with Raymond C. Stevens and Vadim Cherezov
Department of Molecular Biology
The Scripps Research Institute, La Jolla, CA

2008–2009 Postdoctoral Fellow with Raymond C. Stevens and Vadim Cherezov
Department of Molecular Biology
The Scripps Research Institute, La Jolla, CA

2006–2007 Visiting Scholar with Martin Caffrey
Department of Chemical and Environmental Sciences
University of Limerick, Ireland

2002 –2007 Graduate Student with Martin Caffrey
Biophysics Program
The Ohio State University, Columbus OH

FELLOWSHIP & AWARDS

2002 University Fellowship at The Ohio State University.
2007 Presidential Fellowship Finalist at The Ohio State University.
2013 1000 Young Talents of China.
2015 Outstanding Innovative Scholar of China.
2016 Hauptman-Woodward Medical Research Institute (HWI) BioXFEL Award.
2016 Eli Lilly Research Award.
2017 Flinn Foundation Award.

PROFESSIONAL AFFILIATIONS

Member, The Biophysical Society (since 2006)
Member, American Crystallographic Association (ACA) (since 2013)
Member, Asia Pacific Protein Association (APPA) (since 2014)
Member, American Chemical Society (ACS) (since 2016)

RESEARCH

CURRENT RESEARCH SUPPORTS

External

Flinn Foundation Grant Program ($100,000 / 2 years) - PI 2017-2019
Title: Structural approach to correcting an abnormal servomechanism involved in appetite regulation. (PI: Wei Liu)

Lilly Research Award Program (LRAP) ($265,000 / 2 years) - PI 2016-2018
Title: Molecular Signature of Biased Agonism in G Protein-Coupled Receptors. (PI: Wei Liu)

Mayo Structural Alliance Program ($200,000 / 2 years) - PI 2016-2018
Title: Mayo-ASU Structural Biology Alliance Program projects 1-2. (PI: Wei Liu)

Mayo Structural Alliance Program ($200,000 / 2 years) - PI 2016-2018
Title: Mayo-ASU Structural Biology Alliance Program projects 5-6. (PI: Wei Liu)

HWI BioXFEL STC Discretionary Funds ($120,000 / 2 years) - PI 2016-2018
Title: Structural Studies of G-Protein-Coupled Receptors (GPCRs)/G Protein Complex by Serial Femtosecond Nanocrystallography. (PI: Wei Liu)

Mayo Structural Alliance Program ($400,000 / 2 years) – Co-PI 2016-2018
Title: Metabolic Disease Emphasis and Hematology & Oncology Emphasis. (PI: Petra Fromme)

NSF-BIO-DBI 1531991 ($2,825,509 / 5 years) - Co-PI 2015-2018
Title: Acquisition of Cryo-EM for Southwest Regional Center. (PI: John Spence)

NIH R01GM095583 ($1,421,090 / 5 years) - Co-I 2014-2019
Title: Femtosecond nano-crystallography of membrane proteins. (PI: Petra Fromme)

Internal

ASU Start-Up Fund to Wei Liu 2015-2018

Mayo Clinic-ASU Collaborative Seed Grant Award ($50,000) – **PI (100%)** 2016-2017
Title: Nanobody Production for GPCR Structure-Function Studies.

COMPLETED RESEARCH SUPPORTS

External

NIH R01GM089857-05 ($1,634,840 / 5 years) - Co-I 2010-2015
Title: Molecular Mechanism of Allosteric Modulation of the Oxytocin Receptor by Sterols. (PI: Vadim Cherezov)

NIH 5U54GM094618-04 ($4,735,575 / 5 years) - Co-I 2010-2015
Title: GPCR Network (PI: Raymond C. Stevens)

Internal

ASU Biodesign Seed Grant ($95,000 for 1 year) – **Co-PI (100%)** 2015-2016
Title: Structure and function of the mammalian TRPM8—μ-opioid receptor membrane protein complex.

ASU Biodesign Seed Grant ($131,000 for 1 year) – **Co-PI (100%)** 2015-2016
Title: Solving Structures of Viroporins – Targets for Antiviral Therapeutic Development.

ASU Biodesign Seed Grant ($90,000 for 1 year) – **Co-I (100%)** 2015-2016
Title: Development of genetic immunization approaches to produce novel ligands for membrane protein targets of structural and therapeutic interest.

PUBLICATIONS

Peer-Reviewed Articles: (**H-index=27,** Google Scholar: https://scholar.google.com/citations?user=2gqfu9AAAAAJ&hl=en)

At Arizona State University

41. J. Xiang, E. Chun, C. Liu, L. Jing, Z. Al-Sahouri, L. Zhu, and **W. Liu**[#]. (2016) Successful Strategies to Determine High-Resolution Structures of GPCRs. ***Trends Pharmacol. Sci.*** 2016 Dec;37(12):1055-1069.
40. A. Batyuk, L. Galli, A. Ishchenko, G.W. Han, C. Gati, P.A. Popov, M-Y Lee, B. Stauch, T.A. White, A. Barty, A. Aquila, M.S. Hunter, M. Liang, S. Boutet, M. Pu, Z-J Liu, G. Nelson, D. James, C. Li, Y. Zhao, J.C.H. Spence, **W.**

Liu, P. Fromme, V. Katritch, U. Weierstall, R.C. Stevens and V. Cherezov. (2016) Native phasing of x-ray free-electron laser data for a G protein–coupled receptor. ***Science Advances*** Vol. 2, no. 9, e1600292.

39. A. Ishchenko, V. Cherezov, **W. Liu**[#]. (2016) Preparation and Delivery of Protein Microcrystals in Lipidic Cubic Phase for Serial Femtosecond Crystallography. ***J. Vis. Exp.*** (115), e54463, doi:10.3791/54463..
38. T.A. White, A. Barty, **W. Liu**, A. Ishchenko, H. Zhang, C. Gati, N.A. Zatsepin, S. Basu, D. Oberthür, M. Metz, K.R. Beyerlein, C.H. Yoon, O.M. Yefanov, D. James, D. Wang, M. Messerschmidt, J.E. Koglin, S. Boutet, U. Weierstall, V. Cherezov. (2016) Serial femtosecond crystallography datasets from G protein-coupled receptors. ***Scientific Data***, 3:160057.
37. X.E. Zhou, X. Gao, A. Barty, Y. Kang, Y. He, **W. Liu**, A. Ishchenko, T.A. White, O. Yefanov, G.W. Han, Q. Xu, P.W. de Waal, K.M. Suino-Powell, S. Boutet, G.J. Williams, M. Wang, D. Li, M. Caffrey, H.N. Chapman, J.C.H. Spence, P. Fromme, U. Weierstall, R.C. Stevens, V. Cherezov, K. Melcher & H.E. Xu (2016) X-ray laser diffraction for structure determination of the rhodopsin-arrestin complex. ***Scientific Data.*** 3:160021.
36. Y. Kang, X.E. Zhou, X. Gao, Y. He, **W. Liu**, A. Ishchenko, A. Barty, T.A. White, O. Yefanov, G.W. Han, Q. Xu, P.W. de Waal, J. Ke, M.H. Tan, C. Zhang, A. Moeller, G.M. West, B.D. Pascal, N. Van Eps, L.N. Caro, S.A. Vishnivetskiy, R.J. Lee, K.M. Suino-Powell, X. Gu, K. Pal, J. Ma, X. Zhi, S. Boutet, G.J. Williams, M. Messerschmidt, C. Gati, N.A. Zatsepin, D. Wang, D. James, S. Basu, S. Roy-Chowdhury, C.E. Conrad, J. Coe, H. Liu, S. Lisova, C. Kupitz, I. Grotjohann, R. Fromme, Y. Jiang, M. Tan, H. Yang, J. Li, M. Wang, Z. Zheng, D. Li, N. Howe, Y. Zhao, J. Standfuss, K. Diederichs, Y. Dong, C.S. Potter, B. Carragher, M. Caffrey, H. Jiang, H.N. Chapman, J.C. Spence, P. Fromme, U. Weierstall, O.P. Ernst, V. Katritch, V.V. Gurevich, P.R. Griffin, W.L. Hubbell, R.C. Stevens, V. Cherezov, K. Melcher, H.E. Xu (2015) Crystal structure of rhodopsin bound to arrestin by femtosecond X-ray laser. ***Nature***. 523, 561–567.
35. H. Zhang, H. Unal, C. Gati, G.W. Han, **W. Liu**, N.A. Zatsepin, D. James, D. Wang, G. Nelson, U. Weierstall, M.R. Sawaya, Q. Xu, M. Messerschmidt, G.J. Williams, S. Boutet, O.M. Yefanov, T.A. White, C. Wang, A. Ishchenko, K.C. Tirupula, R. Desnoyer, J. Coe, C.E. Conrad, P. Fromme, R.C. Stevens, V. Katritch, S.S. Karnik, V. Cherezov (2015) Structure of the Angiotensin Receptor Revealed by Serial Femtosecond Crystallography. ***Cell***. 161: 833-844.
34. D. Li, P.J. Stansfeld, M.S.P. Sansom, A. Keogh, L. Vogeley, N. Howe, J.A. Lyons, D. Aragao, P. Fromme, R. Fromme, S. Basu, I. Grotjohann, C. Kupitz, K. Rendek, U. Weierstall, N.A. Zatsepin, V. Cherezov, **W. Liu**, S. Bandaru, N.J. English, C. Gati, A. Barty, O. Yefanov, H.N. Chapman, K. Diederichs, M. Messerschmidt, S. Boutet, G.J. Williams, M.M. Seibert, M. Caffrey (2015) Ternary structure reveals mechanism of a membrane diacylglycerol kinase. ***Nat Commun*** 6: 10140.
33. R. Fromme, A. Ishchenko, M. Metz, S.R. Chowdhury, S. Basu, S. Boutet, P. Fromme, T.A. White, A. Barty, J.C.H. Spence, U. Weierstall, **W. Liu**[#], V. Cherezov. (2015) Serial femtosecond crystallography of soluble proteins in lipidic cubic phase. ***IUCrJ***. 4;2(Pt 5):545-51. ([#]co-corresponding)
32. G. Fenalti, N.A. Zatsepin, C. Betti, P. Giguere, G.W. Han, A. Ishchenko, **W. Liu**, K. Guillemyn, H. Zhang, D. James, D. Wang, U. Weierstall, J.C.H. Spence, S. Boutet, M. Messerschmidt, G.J. Williams, C. Gati, O.M. Yefanov, T.A. White, D. Oberthuer, M. Metz, C.H. Yoon, A. Barty, H.N. Chapman, S. Basu, J. Coe, C.E. Conrad, R. Fromme, P. Fromme, D. Tourwe, P.W. Schiller, B.L. Roth, S. Ballet, V. Katritch, R.C. Stevens, V. Cherezov (2015) Structural basis for bifunctional peptide recognition at human delta-opioid receptor. ***Nat Struct Mol Biol*** 22: 265-268.
31. R.M. Lawrence, C.E. Conrad, N.A. Zatsepin, T.D. Grant, H. Liu, D. James, G. Nelson, G. Subramanian, A. Aquila, M.S. Hunter, M. Liang, S. Boutet, J. Coe, J.C.H. Spence, U. Weierstall, **W. Liu**, P. Fromme, V. Cherezov and B.G. Hogue. (2015) Serial femtosecond X-ray diffraction of enveloped virus microcrystals. ***Struct. Dyn.*** 2, 041720.

Before Arizona State University

30. X. Yin, H. Xu, M.A. Hanson, **W. Liu**[#] (2014) GPCR crystallization using lipidic cubic phase technique. ***Curr Pharm Biotechnol.*** 15(10):971-9.
29. **W. Liu**, A. Ishchenko and V. Cherezov (2014) Preparation of microcrystals in lipidic cubic phase for serial femtosecond crystallography. ***Nat Protoc*** 9: 2123-2134.
28. **W. Liu**, D. Wacker, C. Wang, E. Abola and V. Cherezov (2014) Femtosecond crystallography of membrane proteins in the lipidic cubic phase. ***Phil Trans R Soc B*** 369: 20130314.
27. U. Weierstall, D. James, C. Wang, T.A. White, D. Wang, **W. Liu**, J.C. Spence, R.B. Doak, G. Nelson, P. Fromme, R. Fromme, I. Grotjohann, C. Kupitz, N.A. Zatsepin, H. Liu, S. Basu, D. Wacker, G.W. Han, V. Katritch, S. Boutet, M. Messerschmidt, G.J. Williams, J.E. Koglin, M.M. Seibert, M. Klinker, C. Gati, R.L., Shoeman, A. Barty, H.N. Chapman, R.A. Kirian, K.R. Beyerlein, R.C. Stevens, D. Li, S.T. Shah, N. Howe, M. Caffrey and V. Cherezov (2014) Lipidic cubic phase injector facilitates membrane protein serial femtosecond crystallography. ***Nat Commun*** 5: 3309.

26. D.L. Gater, O. Saurel, I. Iordanov, **W. Liu**, V. Cherezov, A. Milon (2014) Two classes of cholesterol binding sites for the b2AR revealed by thermostability and NMR. ***Biophys. J.*** 107: 2305-2312.
25. **W. Liu**, D. Wacker, C. Gati, G.W. Han, D. James, D. Wang, G. Nelson, U. Weierstall, V. Katritch, A. Barty, N.A. Zatsepin, D. Li, M. Messerschmidt, S. Boutet, G.J. Williams, J.E. Koglin, M.M. Seibert, C. Wang, S.T.A. Shah, S. Basu, R. Fromme, C. Kupitz, K.N. Rendek, I. Grotjohann, P. Fromme, R.A. Kirian, K.R. Beyerlein, T.A. White, H.N. Chapman, M. Caffrey, J.C.H. Spence, R.C. Stevens and V. Cherezov (2013) Serial femtosecond crystallography of G protein-coupled receptors. ***Science***. 342: 1521-1524.
24. C. Wang, H. Wu, V. Katritch, G.W. Han, X.-P. Huang, **W. Liu**, F.Y. Siu, B.L. Roth, V. Cherezov and R.C. Stevens (2013) Structure of the human smoothened receptor bound to an antitumour agent. ***Nature***. 497: 338-343.
23. F.Y. Siu, M. He, C. de Graaf, G.W. Han, D. Yang, Z. Zhang, C. Zhou, Q. Xu, D. Wacker, J.S. Joseph, **W. Liu**, J. Lau, V. Cherezov, V. Katritch, M.W. Wang and R.C. Stevens (2013) Structure of the human glucagon class B G-protein-coupled receptor. ***Nature***. 499: 444-449.
22. D. Wacker, C. Wang, V. Katritch, G.W. Han, X.-P. Huang, E. Vardy, J.D. McCorvy, Y. Jiang, M. Chu, F.Y. Siu, **W. Liu**, H.E. Xu, V. Cherezov, B.L. Roth and R.C. Stevens (2013) Structural features for functional selectivity at serotonin receptors. ***Science***. 340: 615-619.
21. C. Wang, Y. Jiang, J. Ma, H. Wu, D. Wacker, V. Katritch, G.W. Han, **W. Liu**, X.-P. Huang, E. Vardy, J.D. McCorvy, X. Gao, E.X. Zhou, K. Melcher, C. Zhang, F. Bai, H. Yang, L. Yang, H. Jiang, B.L. Roth, V. Cherezov, R.C. Stevens and H.E. Xu (2013) Structural basis for molecular recognition at serotonin receptors. ***Science***. 340: 610-614.
20. H. Gutierrez-de-Teran, A. Massink, D. Rodriguez, **W. Liu**, G.W. Han, G.S. Joseph, I. Katritch, L.H. Heitman, L. Xia, A.P. IJzerman, V. Cherezov, V. Katritch, R.C. Stevens (2013) The role of a sodium ion binding site in the allosteric modulation of the A2A adenosine G Protein-Coupled Receptor. ***Structure***. 21:2175-85.
19. R. Lane*, P. Chubukov*, **W. Liu***, M. Canals, V. Cherezov, R. Abagyan, R.C. Stevens, V. Katritch (2013) Structure-based ligand discovery targeting orthosteric and allosteric pockets of dopamine receptors. ***Mol Pharmacol*** 84: 794-807. (*contributed equally)
18. A.A. Thompson*, **W. Liu***, E. Chun*, V. Katritch, H. Wu, E. Vardy, X-P Huang, C. Trapella, R. Guerrini, G. Calo, B.L. Roth, V. Cherezov, and R.C. Stevens. (2012) Structure of the Nociceptin/Orphanin FQ Receptor in Complex with a Peptide Mimetic. ***Nature***. 485: 395-399. (Cover paper) (*contributed equally)
17. **W. Liu***, E. Chun*, A.A. Thompson*, P. Chubukov, F. Xu, V. Katritch, G.W. Han, C.B. Roth, L.H. Heitman, A.P. IJzerman, V. Cherezov, and R.C. Stevens. (2012) Structural Basis for Allosteric Regulation of GPCRs by Sodium Ions. ***Science***. 337: 232-236. (*contributed equally)
16. E. Chun*, A.A. Thompson*, **W. Liu***, C.B. Roth, M.T. Griffith, V. Katritch, J. Kunken, F. Xu, V. Cherezov, M.A. Hanson, and R.C. Stevens. (2012) Fusion Partner Toolchest for the Stabilization and Crystallization of G Protein-Coupled Receptors. ***Structure***. 20: 967-976. (Cover paper) (*contributed equally)
15. J.S. Santos, G.A. Asmar-Rovira, G.W. Han, **W. Liu**, R. Syeda, V. Cherezov, K.A. Baker, R.C. Stevens, and M. Montal (2012) Crystal structure of a voltage-gated K+ channel pore module in a closed state in lipid membranes. ***J Biol Chem.*** 287: 43063-43070. (Cover paper).
14. J.W. Fairman, N. Dautin, D. Wojtowicz, **W. Liu**, N. Noinaj, T.J. Barnard, E. Udho, T.M. Przytycka, V. Cherezov, and S.K. Buchanan. (2012) Crystal Structures of the Outer Membrane Domain of Intimin and Invasin from Enterohemorrhagic E. coli and Enteropathogenic Y. pseudotuberculosis. ***Structure***. 20:1233-1243.
13. H. Wu, D. Wacker, V. Katritch, M. Mileni, G.W. Han, E. Vardy, **W. Liu**, A.A. Thompson, X-P. Huang, F.I. Carroll, S.W. Mascarella, R.B. Westkaemper, P.D. Mosier, B.L. Roth, V. Cherezov, and R.C. Stevens. (2012) Structure of the human μ-opioid receptor in complex with JDTic. ***Nature***. 485: 327-332. (Cover paper)
12. T. Tiefenbrunn*, **W. Liu***, Y. Chen, V. Katritch, D.C. Stout, J.A. Fee and V. Cherezov. (2011) High Resolution Structure of the ba3 Cytochrome c Oxidase from Thermus thermophilus in a Lipidic Environment. ***PLoS ONE.*** 6: e22348. (*contributed equally)
11. T. Shimamura, M. Shiroishi, S. Weyand, H. Tsujimoto, G. Winter, V. Katritch, R. Abagyan, V. Cherezov, **W. Liu**, G.W. Han, T. Kobayashi, R.C. Stevens and S. Iwata. (2011) Structure of the human histamine H1 receptor complex with doxepin. ***Nature***. 475: 65-70.
10. J.S. Joseph, **W. Liu**, J. Kunken, T. Weiss, H. Tsuruta and V. Cherezov. (2011) Characterization of lipid matrices for membrane protein crystallization by high-throughput small angle X-ray scattering. ***Methods***. 55: 342-349.
9. F. Xu*, **W. Liu***, M.A. Hanson, R.C. Stevens and V. Cherezov. (2011) Development of an Automated High Throughput LCP-FRAP Assay to Guide Membrane Protein Crystallization in Lipid Mesophases. ***Cryst. Growth Des.*** 11(4): 1193-1201. (*contributed equally)
8. **W. Liu,** and V. Cherezov. (2011) Crystallization of Membrane Proteins in Lipidic Mesophases. ***J Vis Exp.*** 49.

7. E. Chien, **W. Liu**, Q. Zhao, V. Katritch, G.W. Han, M.A. Hanson, L. Shi, A.H. Newman, J.A. Javitch, V. Cherezov, and R.C. Stevens. (2010) Structure of the human dopamine D3 receptor in complex with a D2/D3 selective antagonist. ***Science***. 330(6007): 1091-1095.
6. B. Wu, E. Chien, C. Mol, G. Fenalti, **W. Liu**, V. Katritch, R. Abagyan, A. Brooun, P. Wells, F. Bi, D. Hamel, P. Kuhn, T.M. Handel, V. Cherezov, and R.C. Stevens. (2010) Structures of the CXCR4 chemokine receptor in complex with small molecule and cyclic peptide antagonists. ***Science***. 330(6007): 1066-1071.
5. **W. Liu,** M.A. Hanson, R.C. Stevens, and V. Cherezov. (2010) LCP-Tm: an Assay to Measure and Understand Stability of Membrane Proteins in a Membrane Environment. ***Biophys. J.*** 98(8): 1539-1548.
4. V. Cherezov, **W. Liu,** J. Derrick, B. Luan, A. Aksimentiev, V. Katritch, and M. Caffrey. (2008) In meso Crystal Structure and Computer Simulations Suggest an Alternative Proteoglycan Binding Site in the OpcA Outer Membrane Adhesin. ***Proteins***. 71: 24-34
3. **W. Liu,** and M. Caffrey. (2006) Interactions of tryptophan, tryptophan peptides and tryptophan alkyl esters at curved membrane interfaces. ***Biochemistry***. 45(39): 11713-11726.
2. V. Cherezov, E. Yamashita, **W. Liu,** M. Zhalnina, W.A. Cramer, and M. Caffrey. (2006) In Meso Structure of the Cobalamin Transporter, BtuB, at 1.95 Å Resolution. ***J. Mol. Biol.*** 364(4): 716-734.
1. **W. Liu,** and M. Caffrey. (2005) Gramicidin Structure and Disposition in Highly Curved Membranes. ***J. Struct. Biol.*** 150(1): 23-40.

Invited Book Chapters

At Arizona State University

1. L. Zhu, U. Weierstall, V. Cherezov, and **W. Liu**[#]. (2016) Serial Femtosecond Crystallography of Membrane Proteins. Springer. **The Next Generation in Membrane Protein Structure Determination**, I. Moraes, eds. Springer, Springer International Publishing.

* indicates equal contribution of these authors.
[#] indicates corresponding author.

Patents

At Arizona State University

2. P. Kuhn, D. Rodriguez, A. Ernesto, A. Carlsson, **W. Liu**, J. Hicks. (2015) Genotypic and phenotypic analysis of circulating tumor cells to monitor tumor evolution in prostate cancer patients. International Application No.: PCT/US2014/058304.

Before Arizona State University

1. M.A. Hanson, C.B. Roth, R.C. Stevens, J.M. Kunken, M.T. Griffith, A.A. Thompson, **W. Liu**, F. Xu, V. Katritch. (2012) Novel fusion partners for the purpose of crystallizing g-protein coupled receptors. US Patent App. 13/470,104.

PRESENTATIONS

Invited Talks

At Arizona State University

27. January 10, 2017 – Invited speaker for the 4th BioXFEL international meeting. “Structure-Based Drug Design Platform for GPCRs in LCP”.
26. September 06, 2016 – Invited speaker for Drug Discovery and Developmental Therapeutics Seminar at University of Arizona. “Femtosecond Crystallography of GPCRs in Lipidic Cubic Phase (LCP) Technique”.
25. June 14, 2016 – Invited speaker for 2016 G-Protein Signaling Workshop. “Crystallizations of G Protein-Coupled Receptors in Lipidic Cubic Phase (LCP) Technique”.
24. May 04, 2016 – Invited speaker for the BioXFEL Lecture series. “Femtosecond Crystallography of GPCRs”.
23. April 29, 2016 – Invited speaker for the DESY-ASU workshop at Hamburg, Germany. “Femtosecond Crystallography of Membrane Proteins in LCP”.
22. April 01, 2016 – Invited speaker for the The Fusion 2016 (Biodesign Retreat) at Carefree, AZ. “GPCRs Drug Discovery”.

21. March 07, 2016 – Invited speaker for the GPCR workshop at University of Southern California. “Protein thermal stability assay in LCP”.
20. February 24, 2016 – Invited speaker for the seminar series at Center of Biological Physics ASU. “Serial Femtosecond Crystallography of Membrane Proteins in LCP”.
19. December 04, 2015 - Invited speaker for the seminar series at Wuhan University 2015. “Membrane Protein Crystallization in LCP”.
18. October 08, 2015 - Invited speaker for the LCLS User Meeting 2015. “Serial Femtosecond Crystallography of GPCRs in LCP”.
17. September 22, 2015 - Invited speaker for the 9th Annual Symposium on GPCR-Based Drug Discovery 2015. “Serial Femtosecond Crystallography of membrane proteins in LCP”.
16. September 21, 2015 - Invited lecture instructor for the 9th Annual Symposium on GPCR-Based Drug Discovery 2015. “GPCR Structural Studies with LCP”.
15. March 17, 2015 - Invited speaker for West Coast Protein Crystallography Workshop XXII / 2015. “Serial Femtosecond Crystallography of G Protein-Coupled Receptors”.
14. January 21, 2015 - Invited speaker for the Diamond Light Source at UK. “Serial Femtosecond Crystallography of G Protein-Coupled Receptors”.

Before Arizona State University

13. December 17, 2014 - Invited speaker for the National Center for Protein Science Shanghai. “Serial Femtosecond Crystallography of G Protein-Coupled Receptors”.
12. October 02, 2014 - Invited speaker for the Structure and Functions of Biomembranes Workshop at Moscow Institute of Physics and Technology. “Novel Fusion Partners for GPCR Structural Studies”.
11. June 27, 2014 - Invited speaker for the 2nd Australian Advanced Methods in Crystallography Workshop. “Technical Developments of LCP Methodology”.
10. May 18, 2014 - Invited speaker for the Asia Pacific Protein Association 2014. “Serial Femtosecond Crystallography of G Protein-Coupled Receptors”.
9. July 22, 2013 - Invited speaker for the American Crystallographic Association Annual Meeting 2013. “Novel fusion partners for GPCR crystallization”.
8. July 21, 2013 - Invited speaker for the American Crystallographic Association Annual Meeting 2013. “High-throughput technology advances with Lipidic Cubic Phase (LCP) technique”.
7. May 14, 2013 - Invited speaker for the CPC series seminar at Novartis USA. “Novel structures and drug design with GPCRs”.
6. April 18, 2013 - Invited speaker for the department seminar at Virginia Commonwealth University. “Novel Technical Developments of Lipidic Cubic Phase (LCP) Methodology”.
5. August 28, 2012 – Invited speaker for the 9th IUPAC International Symposium on Biomolecular Chemistry & 8th International Symposium for Chinese Medicinal Chemists (ISCMC-8). “Structural basis and drug design with GPCRs”.
4. June 01, 2012 – Invited speaker for the 42nd Mid-Atlantic Macromolecular Crystallography Meeting. “Allosteric sites in the human A2A adenosine receptor with 1.8 Å structure”.
3. Aug 16, 2011 – Invited speaker for the Public Forum Seminar at Novartis China. “New GPCR Structures and Structure Based Drug Design”.
2. May 20, 2011 – Invited speaker for the Cold Spring Harbor Asia Conference-Membrane Proteins: Structure & Function. “Structure and Function of the GPCR Family”.
1. Sep 16, 2010 – Invited speaker for the 13th International Conference on the Crystallization of Biological Macromolecules (ICCBM13). “Using LCP-FRAP to guide crystallization of GPCRs in lipidic mesophases”.

Organizer/Co-Organizer for Workshops

9. March 07, 2016 – Lipidic Cubic Phase and GPCR workshop at University of Southern California.
8. April 09, 2015 – Lipidic Cubic Phase and Serial Crystallography Workshop of Membrane Protein Structures 2015 at Argonne National Lab.
7. January 22, 2015 – Membrane Proteins Structural Workshop at Diamond Light Source (UK).
6. October 17, 2014 – LCP Tools and Technologies Workshop at Boston.
5. June 27th, 2014 – LCP Tools and Technologies Workshop at Australian Synchrotron.
4. September 18, 2012 – LCP Tools and Technologies Workshop at Shanghai Institute of Materia Medica (China,

SIMM).

3. August 02, 2012 – LCP Tools & Technologies Workshop at Massachusetts Institute of Technology (MIT).
2. June 02, 2012 – LCP Tools and Structure Determination Workshop at University of Virginia.
1. November 16, 2010 – LCP Tools and Technologies Workshop at the Scripps Research Institute.

Poster Presentation at Meetings

16. August 21-24, 2016 – Poster exhibition of the Biology and Synchrotron Radiation 2016 meeting (BuiCARS) at Stanford, CA. R.F. Fischetti, J. Martin-Garcia, N. Zatsepin, G. Ketawala, L. Zhu, G. Subramanian, G. Nelson, D. James, A. Schaffer, A. Ishchenko, C. Ogata, N. Venugopalan, D. Kissick, M. Hilgart1, S. Stepanov, S. Xu, V. Cherezov, U. Weierstall, W. Liu, P. Fromme, J. Spence. "Serial Millisecond Crystallography of Microcrystals at the Advanced Photon Source".
15. July 22-26, 2016 – Poster exhibition of The 66th Annual Meeting of the American Crystallographic Association (ACA) at Denver, Colorado. J. Martin-Garcia, N. Zatsepin, G. Ketawala, L. Zhu, G. Subramanian, G. Nelson, D. James, A. Schaffer, A. Ishchenko, C. Ogata, N. Venugopalan, D. Kissick, S. Xu, V. Cherezov, U. Weierstall, **W. Liu**, J. Spence, P. Fromme, R. Fischetti. "Serial Millisecond Crystallography at the Advanced Photon Source".
14. July 22-26, 2016 – Poster exhibition of The 66th Annual Meeting of the American Crystallographic Association (ACA) at Denver, Colorado. E. Chun, P. Chen, E. Gualtieri, D. Rodionov, L. Ramsey, E. Zhao, **W. Liu**. "Prescreening integral membrane crystallization conditions and protein preparations utilizing FRAP".
13. June 14, 2016 – Poster exhibition of The GPCR signaling workshop at New York City, NY. L. Zhu and **W. Liu**. "New developments and biological discoveries of membrane proteins with SFX".
12. April 01, 2016 – Poster exhibition of The Fusion 2016 (Biodesign Retreat) at Carefree, AZ. J. Geiger, L. Zhu, R. Lawrence, P. Chen, E. Chun, S. Daskalova, J. Carrillo, B. Baravati, H.H. Hogue, M. Goryll, P. Fromme, **W. Liu**, B.G. Hogue. "Coronavirus Small Envelope (E) Proteins: Expression, Purification, and Crystallization for Structural Discovery".
11. March 09, 2016 – Poster exhibition of GPCR workshop 2016 at USC. L. Zhu, L. Jing, D. Truong and **W. Liu**. "High-Throughput Screening for New GPCR Structures".
10. November 29, 2011 – Poster exhibition of JCIMPT-Complexes Scientific Advisory Board meeting. **W. Liu**, F. Xu, J. Liu, J.S. Joseph, R.C. Stevens and V. Cherezov. "LCP Technology Developments Contribute to New GPCR Structures".
9. November 28, 2011 – Poster exhibition of the GPCR Network Scientific Advisory Board meeting. **W. Liu**, E. Chien, M.A. Hanson, R.C. Stevens and V. Cherezov. "Using LCP-FRAP to guide crystallization of Dopamine D3R in lipidic mesophases".
8. May 18, 2011 – Poster exhibition of the Cold Spring Harbor Asia Conference-Membrane Proteins: Structure & Function. **W. Liu**, F. Xu, E. Chien, B. Wu, J.S. Joseph, R.C. Stevens and V. Cherezov. "Technology developments in LCP contribute to new GPCR structures".
7. November 17, 2010 – Poster exhibition of the 3rd NIH Roadmap Meeting on Membrane Protein Technologies. **W. Liu**, E. Chien, F. Xu, M.A. Hanson, R.C. Stevens, and V. Cherezov. "Using LCP-FRAP to guide crystallization of GPCRs in lipidic mesophases".
6. March 26, 2009 – Poster exhibition of the 2nd Annual NIH Roadmap Meeting on Membrane Protein Technologies. **W. Liu**, M.A. Hanson, R.C. Stevens, and V. Cherezov. "LCP Protein Thermal Stability Assay (LCP-Tm) to perform pre-crystallization analysis of Integral Membrane Proteins".
5. October 25, 2007 – Poster exhibition of The 65th Annual Pittsburgh Diffraction Conference. **W. Liu** and M. Caffrey. "Interactions of tryptophan, tryptophan peptides and tryptophan alkyl esters at curved membrane interfaces".
4. May 12, 2007 – Poster exhibition of IGP symposium at The Ohio State University. **W. Liu** and M. Caffrey. "Interactions of tryptophan, tryptophan peptides and tryptophan alkyl esters at curved membrane interfaces".
3. March 7, 2007 – Poster exhibition of 51th Annual Meeting of the Biophysical Society. B. Luan, V. Cherezov, **W. Liu**, J. Moore, J. Derrick, M. Caffrey, and A. Aksimentiev. "Refining X-ray structures of the adhesin OpcA with molecular dynamics".
2. October 11, 2005 – Poster exhibition of workshop on Biological Membranes --- Structure and Function at The Ohio State University. **W. Liu** and M. Caffrey. "Gramicidin Structure and Disposition in Highly Curved Membranes".
1. November 18, 2004 – Poster exhibition of Biophysics Program at The Ohio State University. **W. Liu** and M. Caffrey. "Gramicidin Structure and Disposition in Highly Curved Membranes".

TEACHING

COURSES TAUGHT

The Ohio State University, Columbus Ohio, Department of Chemistry (2004-2006)

CHE 101 General Chemistry Lab (Teaching Assistant)
CHE 121 Advanced Chemistry Lab and Recitation (Head Teaching Assistant)

Arizona State University (2015-**present**)

(Graduate level)

BCH 501 Current Topic in Biochemistry (1 credit) (School of Molecular Sciences)
2015 Spring Enrollment = 15
Evaluation: 4.96/5.00
2016 Fall Enrollment = 24
Evaluation: 4.93/5.00

BCH 598 Biophysical Chemistry (3 credit) (School of Molecular Sciences)
2015 Fall Enrollment = 07 (team-taught with Wade Van Horn)
Evaluation: 4.50/5.00
2016 Fall Enrollment = 10 (team-taught with Petra Fromme)
Evaluation: 4.80/5.00

(Undergraduate level)

BCH 494 Protein Chemistry (3 credit) (School of Molecular Sciences)
2015 Fall Enrollment = 13 (team-taught with Rebekka Wachter)
Evaluation: 4.92/5.00

BCH 462 General Biochemistry (3 credit) (School of Molecular Sciences)
2017 Spring Enrollment = 83

(Guest Lectures)

BCH 598 Biophysical Chemistry (School of Molecular Sciences)
Feb 09, 2015 Topic: Structural Discoveries (3-hour lecture)

CHE 598 Supramolecular Chemistry and Self-assembly (School of Molecular Sciences)
Nov 25, 2015 Topic: Drug Discoveries (3-hour lecture)

BCH 598 Biophysical Chemistry (School of Molecular Sciences)
Feb 08, 2016 Topic: Structural Discoveries (3-hour lecture)

BCH 494 Protein Chemistry (School of Molecular Sciences)
Sept 02-16, 2016 Topic: Structured-Based Drug Discoveries (1-hour lecture)

MENTORING

POSTDOCTORAL FELLOW

Name:	**Time Period:**	**Current Status:**
Eugene Chun	02/2016 – **present**	
Ou Sha	08/2016 – **present**	
Zhen Gong	01/2015 – 12/2015	Postdoc at Columbia University
Jin Xiang	09/2015 – 08/2016	Faculty at Wuhan University
Peng Chen	09/2015 – 07/2016	Faculty at Huazhong University of Science & Technology

GRADUATE STUDENTS

Serve as **Thesis Advisor**:

Lan Zhu	(Biochem)	Ph.D.	05/15 – **present**
Chang Liu	(Biochem)	Ph.D.	08/16 – **present**
Liang Jing	(Biochem)	Ph.D.	08/16 – **present**
James Geiger	(Biochem)	Ph.D.	08/16 – **present**
Zina Al-Sahouri	(Biochem)	Ph.D.	01/17 – **present**

UNDERGRADUATE (Serve as Research Advisor) (*authorship on publications)

Student (Major)(Duration)	Course (Support)	Current position
Maya Erler (Biochem, ASU) (04/15-present)	BCH392	
Steven Cosgrove (Biochem, ASU) (07/15-present)	BCH392	
Reece Riddle (Biochem, ASU) (06/16-01/17)		
Jessica Fitzgerald (Biochem, ASU) (07/15-06/16)		
Kenvin Thoi (Biochem, ASU) (08/15-08/16)		
Zina Al-Sahouri (Biochem, ASU) (10/15- present)	BCH494	Ph.D. Students at ASU.
Chloe Truong (Biochem, ASU) (11/15- present)		Lab Aide at ASU
Jessica Kemper (Biochem, ASU) (10/15-12/16)	BCH494	Law School at ASU.
Chang Liu (Biochem, Wuhan University) (09/15-04/16)		Ph.D. Students at ASU.
Liang Jing (Biochem, Wuhan University) (09/15-04/16)		Ph.D. Students at ASU.
Samantha Bodan (Biochem, ASU) (01/17-present)	BCH392	
Zhen Da (Biochem, ASU) (01/17-present)		
John Pecquex (Biochem, ASU) (01/17-present)		
Jack Liu (Biochem, ASU) (01/17-present)		
Michael Shih (Biochem, ASU) (01/17-present)		

UNDERGRADUATE ACADEMIC MENTORING

Supervisor of Honors Thesis

Steven Cosgrove (Biochemistry, graduation Dec 2016)
Maya Erler (Biochemistry, ASU) (Biochemistry, graduation Dec 2016)

SERVICE

Professional Service

Editorial Board Member of Scientific Journals:

Journal of Visualized Experiments – JoVE (2011 - **present**)

Editorial Board Member of Scientific Journals:

Journal of Current Trends in Medicinal chemistry (2016 - **present**)

Meeting Session Chair:

March 16, 2015 – Session Chair for West Coast Protein Crystallography Workshop XXII / 2015. “Crystallization and data collection”.

Reviewer for Scientific Journals:

Structure (since 2009), Journal of Molecular Biology (since 2010), Journal of Visualized Experiments (since 2011), Biochemistry (since 2012), Bioorganic & Medicinal Chemistry Letters (since 2013), Journal of Chemical Theory and Computation (since 2017).

Science Fairs:

Science SuperStar for *the 2016 ASU’s Night of Open Door at the Biodesign Institute*, Tempe, AZ (02/2016)
Judge for Fusion 2016 (Biodesign Retreat) Poster Reward Committee, Carefree, AZ (04/2016)
Review committee for Mayo Alliance Program (07/2016).

Department Service (MCB: Program in Molecular and Cellular Biology / SMS: School of Molecular Sciences)

Member:	Committee on Seminars (SMS)	(2016 – **present**)
Member:	MCB Graduate Program Admission Committee	(2015 – **present**)
Member:	Graduate Recruitment Team to China (SMS)	(2015 – 2016)
Member:	Committee on Bylaws (SMS)	(2015 – 2016)

University Service (NAU: Nanjing Audit University; USTC: University of Science and Technology of China)

Founder:	NAU 3+1+1 program with W. P. Carey School of Business	(2015 – **present**)
Founder:	Joint Research Center of NAU-ASU	(2016 – **present**)