Po-Lin Chiu, Ph.D.

School of Molecular Sciences | Biodesign Center for Applied Structural Discovery
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SCIENTIFIC INTERESTS

Structural biophysics, membrane proteins, lipid-protein interaction, protein-protein interaction, quantum biology, structural dynamics, electron imaging, electron diffraction, image processing, and cryogenic electron microscopy (cryo-EM)

EDUCATION

10/2004 – 07/2009	Ph.D. Biophysics	Mentor: Henning **Stahlberg**
	Biophysics Graduate Group, University of California, Davis, California *Dissertation: Structural studies of a prokaryotic potassium channel, MloK1, by transmission electron microscopy*	
09/1999 – 06/2001	M.EE. Electrical Engineering	Mentor: Jen-Ho **Tsao**
	Institute of Electrical Engineering, National Taiwan University, Taipei, Taiwan *Thesis: Drug delivery through liposome using ultrasonic imaging and cavitation*	
09/1995 – 06/1999	B.Sc. Pharmacy	
	School of Pharmacy, National Taiwan University, Taipei, Taiwan Intern at the National Taiwan University Hospital, Taipei, Taiwan	

APPOINTMENTS AND POSTGRADUATE TRAINING

08/2024 – present	Associate Professor
	School of Molecular Sciences, Biodesign Center for Applied Structural Discovery, Arizona State University, Tempe, Arizona
03/2025	Visiting Scholar
	Department of Cell and Biological Systems, Pennsylvania State University Cancer Institute, Hershey, Pennsylvania
05/2024 – 04/2026	Visiting Associate Scholar
	Department of Biology and Biological Engineering, California Institute of Technology, Pasadena, California
08/2016 – 07/2024	Assistant Professor

	School of Molecular Sciences, Biodesign Center for Applied Structural Discovery, Arizona State University, Tempe, Arizona	
09/2010 – 07/2016	Postdoctoral Fellow	Mentor: Thomas **Walz**
	Department of Cell Biology, Harvard Medical School, Boston, Massachusetts *Studies of lipid-protein interactions using cryogenic electron microscopy*	
08/2009 – 08/2010	Postdoctoral Researcher	Mentor: Henning **Stahlberg**
	Section of Molecular and Cellular Biology, University of California, Davis, California *In-situ cryogenic electron microscopic study on biological specimens*	

FELLOWSHIPS AND AWARDS

2016	NVIDIA's GPU Grant Program
1999 – 2001	Taiwan National Science Foundation Scholarship
1999	Certified by National Qualification Examination for Medical Professionals
1995 – 1999	Taiwan Nan-Ya Incorporation Scholarship

PUBLICATIONS

Preprint articles

1. †Mastroeni, D., Chan, C.K., Moreshed, N., Diouf, D., de Ávila, C., Suazo, C., Nolz, J., Lopatin, U., Wang, Q., Serrano, G., Beach, T., Dunkley, T., Van Keuren-Jensen, K., Van den Hove, D., White, F.M., **Chiu, P.-L.**, Reiman, E.M., Readhead, B.P., and Singharoy, A. Src kinase as a molecular contributor to tau pathology in Alzheimer's disease. [*bioRxiv* preprint: 10.1101/2024.02.07.579336]

Published articles

37. Dadwal, A., Niedzwiedzki, D.M., **Chiu, P.-L.**, Savikhin, S., Slipchenko, L., and Liu, H. Modulation of singlet excited state dynamics of bacteriochlorophyll *a* in Fenna-Matthews-Olson (FMO) complex by PscB, a subunit with an intrinsically disordered region in *Chlorobaculum tepidum* reaction center. *Photosyn Res* **163**:50 (2025). PMID: 40996466.

36. Niedzwiedzki, D.M., Dadwal, A., **Chiu, P.-L.**, and Liu, H. Triplet state dynamics of bacteriochlorophyll *a* in Fenna-Matthew-Olson (FMO) complex and its modulation by PscB, a subunit in the reaction center of *Chlorobaculum tepidum*. *J Phys Chem B* **129**:4309-4319 (2025). PMID: 40304054.

35. Sen, S., Thaker, A., Williams, D., **Chiu, P.-L.**, and †Nannenga, B.L. Observation of the protein-inorganic interface of ferritin with cryo-electron microscopy. *J Am Chem Soc* **147**:3333-3340 (2025). PMID: 39815632. [*bioRxiv* preprint: 10.1101/2024.09.04.611303]

34. ***Chiu, P.-L.**, *Orjuela, J.D., de Groot, B.L., †Aponte-Santamaría, C., and †Walz, T. Structure and dynamics of cholesterol-mediated aquaporin-0 arrays and implications for lipid rafts. *eLife* **12**:RP90851 (2024). PMID: 39222068. [*bioRxiv* preprint: 10.1101/2023.05.16.540959] (*equal contributions)

33. *Nandi, P., *DeVore, K., *Wang, F., Li, S., Walker, J.D., Truong, T.T., LaPorte, M.G., Wipf, P.,

Schlager, H., McCleerey, J., Paquette, W., Columbres, R.C.A., Gang, T., Poh, Y.-P., Fromme, P., Flint, A.J., Wolf, M., Huryn, D.M., †Chou, T.-F., and †**Chiu, P.-L.** Mechanism of allosteric inhibition of human p97/VCP ATPase and its disease mutant by a class of triazole inhibitors. *Commun Chem* **7**:177 (2024). (*equal contributions) PMID: 39122922.

32. Waheeda, K., Kitchel, H., Wang, Q., and †**Chiu, P.-L.** Molecular mechanism of Rubisco activase: dynamic assembly and Rubisco remodeling. *Front Mole Biosci* **10**:1125922 (2023).
31. Puskar, R., Truong, C.D., Swain, K., Chowdhury, S., Chan, K.-Y., Li, S., Cheng, K.-W., Wang, T.Y., Poh, Y.-P., Mazor, Y., Liu, H., Chou, T.-F., Nannenga, B.L., and †**Chiu, P.-L.** Molecular asymmetry of a photosynthetic assembly from green sulfur bacteria. *Nat Commun* **13**:1-12 (2022).
30. Narayanan, R.P., Procyk, J., Nandi, P., Prasad, A., Xu, Y., Poppleton, E., Williams, D.R., Zhang, F., Yan, H., †**Chiu, P.-L.**, †Stephanopoulos, N., and †Šulc, P. Coarse-grained simulations for the characterization and optimization of hybrid protein-DNA nanostructures. *ACS Nano* **16**:14086-14096 (2022). PMID: 35980981.
29. DeVore, K. and †**Chiu, P.-L.** Probing structural perturbation of biomolecules by extracting cryo-EM data heterogeneity. *Biomolecules* **12**:628 (2022). (invited review)
28. Baker, A.T., Boyd, R.J., Sarkar, D., Crespo, A.T., Chan, C.K., Bates, E., Waraich, K., Vant, J., Wilson, E., Truong, C.D., Lipka-Lloyd, M., Fromme, P., Vermaas, J., Williams, D., Machiesky, L., Heurich, M., Nagalo, B.M., Coughlan, L., Umlauf, S., **Chiu, P.-L.**, Rizkallah, P.J., Cohen, T.S., Parker, A.L., †Singharoy, A., and †Borad, M.J. ChAdOx1 interacts with CAR and PF4 with implications for thrombosis with thrombocytopenia syndrome. *Sci Adv* **7**:eabl8213 (2021). [*bioRxiv* preprint: 10.1101/2021.05.19.444882]
27. *Zhang, X., *Gui, L., *Li, S., *Nandi, P., Columbres, R.C., Wong, D.E., Moen, D.R., Lin, H.J., †**Chiu, P.-L.**, and †Chou, T.-F. Conserved L464 in p97 D1-D2 linker is critical for p97 cofactor regulated ATPase activity. *Biochem J* **478**, 3185-3204 (2021). (*equal contributions)
26. Nandi, P., Li, S., Columbres, R.C.A., Wang, F., Williams, D.R., Poh, Y.-P., †Chou, T.-F., and †**Chiu, P.-L.** Structural and functional analysis of disease-linked p97 ATPase mutant complexes. *Int J Mole Sci* **22**, 8079 (2021).
25. Truong, C.D., Craig, T.A., Cui, G., Botuyan, M.V., Serkasevich, R.A., Chan, K.-Y., †Mer, G., †**Chiu, P.-L.**, and †Kumar, R. Cryo-EM reveals conformational flexibility in apo DNA polymerase ζ. *J Biol Chem* **297**, 100912 (2021).
24. March, K., Venkatraman, K., Truong, C.D., Williams, D., **Chiu, P.-L.**, and †Rez, P. Protein secondary structure signatures from energy loss spectra recorded in the electron microscopy. *J Microsc* **282**, 215-223 (2021).
23. Truong, C.D., Williams, D., Zhu, M., Wang, J.C.-H. and †**Chiu, P.-L.** Sample preparation using lipid monolayer for electron crystallographic studies. *J Vis Exp* **177**, e63015 (2021). (invited review)
22. Godeshala, S., Miryala, B., Dutta, S., Christensen, M.D., Nandi, P., **Chiu, P.-L.**, and †Rege, K. A library of aminoglycoside-derived lipopolymer nanoparticles for delivery of small molecules and nucleic acids. *J Materials Chem B* **8**, 8558-8572 (2020).
21. Yang, J.-H., Williams, D., Kandiah, E., †Fromme, P., and †**Chiu, P.-L.** Structural basis of redox modulation on chloroplast ATP synthase. *Commun Biol* **3**, 482 (2020).
20. Chang, S.L.Y., Reineck, P., Williams, D., Bryant, G., Opletal, G., El-Demrdash, S.A., **Chiu, P.-L.**, Õsawa, E., Barnard, A.S., and †Dwyer, C. Dynamic self-assembly of detonation nanodiamond in water. *Nanoscale* **12**, 5363-5367 (2020).

19. Robertson, K.E., Craciunescu, F.M., Truong, C., **Chiu, P.-L.**, Fromme, P., and †Hansen, D.T. Membrane directed expression in *Escherichia coli* of virulence factors from the Lyme disease agent *Borrelia burgdorferi*. *Sci Rep* **9**, 1-15 (2019).

18. Steber, H.S., Gallante, C., **Chiu, P.-L.**, and †Mangone, M. The *C. elegans* 3'UTRome V2: an updated genomic resource to study 3'UTR biology. *Genome Res* **29**, 2104-2116 (2019). [*bioRxiv* preprint: 10.1101/704098]

17. Toporik, H., Li, J., Williams, D., **Chiu, P.-L.**, and †Mazor, Y. The structure of the photosystem I IsiA supercomplex. *Nat Struct Mole Biol* **26**, 443-449 (2019).

16. Aryal, R.P., Kwak, P.B., Tamayo, A.G., **Chiu, P.-L.**, Walz, T., and †Weitz, C.J. Macromolecular assemblies of the mammalian circadian clock. *Mol Cell* **67**, 770-782 (2017).

15. *Kalbermatter, D., ***Chiu, P.-L.**, Jeckelmann, J.-M., Ucurum, Z., Walz, T., and †Fotiadis, D. Electron crystallography reveals that substrate release from the PTS IIC glucose transporter is coupled to a subtle conformational change. *J Struct Biol* **199**, 39-45 (2017). (*equal contributions)

14. Leksa, N.C., **Chiu, P.-L.**, Bou-Assaf, G.M., Quan, C., Liu, Z., Goodman, A.B., Chambers, M.G., Tsutakawa, S.E., Hammel, M., Peters, R.T., Walz, T., and †Kulman, J.D. The structural basis for the functional comparability of factor VIII and the long-acting variant rFVIIIFc. *J Thromb Haemost* **15**, 1167-1179 (2017).

13. Klara, S.S., Saboe, P.O., Sines, I.T., Babaei, M., **Chiu, P.-L.**, DeZorzi, R., Dayal, K., Walz, T., †Kumar, M., and †Mauter, M.S. Magnetically directed two-dimensional crystallization of OmpF membrane proteins in block copolymers. *J Am Chem Soc* **138**, 28-31 (2016).

12. ***Chiu, P.-L.**, *Li, X., Li, Z., Beckett, B., Brilot, A.F., †Grigorieff, N., †Agard, D.A., †Cheng, Y., and †Walz, T. Evaluation of super-resolution performance of the K2 electron counting camera using 2D crystals of aquaporin-0. *J Struct Biol* **192**, 163-173 (2015). (*equal contributions)

11. Kalbermatter, D., Jeckelmann, J.-M., **Chiu, P.-L.**, Ucurum, Z., Walz, T., and †Fotiadis, D. 2D and 3D crystallization of the wild-type IIC domain of the glucose PTS transporter from *Escherichia coli*. *J Struct Biol* **191**, 376-380 (2015).

10. ***Chiu, P.-L.**, *Bou-Assaf, G., Chhabra, E.S., Chambers, M.G., Liu, L., Peters, R., †Kulman, J.D., and †Walz, T. Mapping the interaction between factor VIII and von Willebrand factor by electron microscopy and mass spectrometry. *Blood* **126**, 935-938 (2015). [Commentary in *Blood*: Krishnaswamy, S. FVIII-VWF dos-à-dos. *Blood* **126**, 923-924 (2015).] (*equal contributions)

9. *Hite, R.K., ***Chiu, P.-L.**, Schuller, J., and †Walz, T. Effect of lipid head groups on double-layered two-dimensional crystals formed by aquaporin-0. *PLoS One* **10**, e0117371 (2015). (*equal contributions)

8. Kowal, J., Chami, M., Baumgartner, P., Arheit, M., **Chiu, P.-L.**, Rangl, M., Scheuring, S., †Nimigean, C.M., and †Stahlberg, H. Ligand-induced structural changes in the cyclic nucleotide-modulated potassium channel MloK1. *Nat Commun* **5**, 3106-3115 (2014).

7. Hopkins, L.E., Patchin, E.S., **Chiu, P.-L.**, Brandenberger, C., Smiley-Jewell, S., and †Pinkerton, K.E. Nose-to-brain transport of aerosolized quantum dots following acute exposure. *Nanotoxicol* **8**, 885-893 (2014).

6. Evans, J.E., Jungjohann, K.L., Wong, P.C.K., **Chiu, P.-L.**, Dutrow, G.H., Arslan, I., and †Browning, N.D. Visualizing macromolecular complexes with *in situ* liquid scanning transmission electron microscopy. *Micron* **43,** 1085-1090 (2013).

5. **Chiu, P.-L.**, Kelly, D.F., and †Walz, T. The use of trehalose in the preparation of specimens for electron microscopy. *Micron* **42**, 762-772 (2011). (invited review)

4. Paoli, E.-E., Kruse, D.E., Seo, J.W., Zhang, H., Kheirolomoom, A., Watson, K.D., **Chiu, P.-L.**, Stahlberg, H., and †Ferrara, K.W. An optical and microPET assessment of thermally sensitive liposome biodistribution in the Met-1 tumor model: importance of formulation. *J Control Release* **143**, 13-22 (2010).
3. **Chiu, P.-L.**, Pagel, M.D., Evans, J.E., Chou, H.-T., Zeng, X., Gipson, B., †Stahlberg, H., and †Nimigean, C.M. The structure of the prokaryotic cyclic nucleotide-modulated potassium channel MloK1 at 16 Å resolution. *Structure* **15**, 1053-1064 (2007). [Feature in *Structure*: Taraska, J.W. and Zagotta, W. Cyclic nucleotide-regulated ion channel: Spotlight on symmetry. *Structure* **15**, 1023-1024 (2007).]
2. Renault, L., Chou, H.-T., **Chiu, P.-L.**, Hill, R.M., Zeng, X., Gipson, B., Zhang, Z.Y., Cheng, A., Unger, V., and †Stahlberg, H. Milestones in electron crystallography. *J Comput Aided Mol Des* **20**, 519-527 (2006).
1. **Chiu, P.-L.**, Wu, C.-Y., Taso, J.-H., and †Chang, F.-H. Drug delivery through liposome by ultrasonic cavitation. *Biomed Eng-App Basis & Comm* **13**, 47-52 (2001).

Book chapters

1. Chan, K.-Y., Truong, C.D., Poh, Y.-P., and †**Chiu, P.-L.** Sample preparation and data collection for electron crystallographic studies on membrane protein structures and lipid-protein interaction. *Methods in Mole Biol* **2215**, 247-265 (2021). (invited review)

Conference proceedings

23. DeVore, K., Waheeda, K., Breen, I., Carsten, A., Wachter, R., and **Chiu, P.-L.** Structural insights into the Rubisco-Rubisco activase complex in higher order plants. *Biophys J* **125**, 41A (2026).
22. DeVore, K., Nandi, P., Kitchel, H., Poh, Y.-P., Chou, T.-F., and **Chiu, P.-L.** Structural study of human neurotrophin receptor complex implicated in neuronal apoptosis and neurodegeneration. *Biophys J* **124**, 534A (2025).
21. Qiu, Y., Das, A., Ferrer, E., Wang, T.-Y., Quan, B., Pang, M., **Chiu, P.-L.**, Sternberg, P., and Chou, T.-F. Physiological function exploration of PLAA via complex structure and organismal level assays. *3rd Chemical Biology Consortium Symposium* (2024).
20. Ranaweera, E., Huseby, C.J., Hansen, D.T., **Chiu, P.-L.**, Coleman, P., and Fromme, P. Cellular models for the investigation of the structural dynamics and activity of human tau protein aggregate formation. *Biophys J* **122**, 41-42a (2023).
19. **Chiu, P.-L.** Structural Basis for excited light transfer within a bacterial photosynthetic supercomplex. *Biophys J* **122**, 242a (2023).
18. Baker, A.T., Boyd, R.J., Sarker, D., Teijeira-Crespo, A., Chan, C.K., Bates, E., Waraich, K., Vant, J.W., Wilson, E., Truong, C.D., Lipka-Lloyd, M., Fromme, P., Vermaas, J., Williams, D., Machiesky, L., Heurich, M., Nagalo, B.M., Coughlan, L., Umlaud, S., **Chiu, P.-L.**, Pizkallah, P.J., Cohen, T.S., Parker, A.L., Singharoy, A., and Borad, M.J. Implications of novel adenovirus-host interactions in thrombosis with thrombocytopenia syndrome. *Human Gene Therapy Methods* A209-A210 (2022).
17. Chan, K.-Y. Structural study of regulated intramembrane proteolysis of p75NTR by γ-secretase. *The Journal of the Alzheimer's Association* **17**, e053458 (2022). (doi: 10.1002/alz.053458)
16. Chan, K.-Y., Poh, Y.-P., and **Chiu, P.-L.** Structural study of regulated intramembrane proteolysis of the p75 neurotrophin receptor by γ-secretase. *Biophys J* (2022).

15. Waheeda, K. and **Chiu, P.-L.** Complex formation of Rubisco and Rubisco activase. *Biophys J* 452a (2022).
14. **Chiu, P.-L.** Evaluation of hollow-cone electron imaging on biomolecules. *Biophys J* (2022). (doi: 10.1016/j.bpj.2021.11.2077)
13. Orjuela, J.D., **Chiu, P.-L.**, Walz, T., de Groot, B.L., and Aponte-Santamaria, C.A. The interplay between cholesterol and aquaporin-0. *Biophys J* **121**, 312a (2022).
12. Nandi, P., Li, S., Coulmbres, R.C.A., Wang, F., Williams, D.R., Poh, Y.-P., Chou, T.-F., and **Chiu, P.-L.** Cryo-EM reveals altered domain-domain communications in dementia-mutant R155H human p97/VCP ATPase. *Biophys J* (2022).
11. Nandi, P. and **Chiu, P.-L.** Structural and functional analysis of p47 cofactor binding on the p97 disease mutant. *Alzheimers Dement* **17**, e054008 (2021).
10. **Chiu, P.-L.**, Yang, J.-H., Williams, D., Kandiah, E., Fromme, P. Redox modulation on chloroplast ATP synthase. *Acta Crystallogr A Found Adv* **A77**, a167 (2021).
9. Nandi, P., Li, S., Columbres, R.C.A., Wang, F., Williams, D.R., Malyutin, A.G., Poh, Y.-P., Chou, T.-F., and **Chiu, P.-L.** Structural and functional analysis of p47 cofactor binding on the p97 disease mutant. *Microsc & Microana* **27**, 1908-1910 (2021).
8. Nandi, P., Poh, Y.-P., and **Chiu, P.-L.** Structural studies of the neuronal apoptotic complex of proNGF-p75NTR-sortilin. *Biophys J* **120**, 120a (2021).
7. Yang, J.-H., Williams, D., Kandiah, E., Fromme, P., and **Chiu, P.-L.** Redox Modulation on Chloroplast ATP Synthase. *Microsc & Microana* **26**, 120-121 (2020).
6. Nandi, P., and **Chiu, P.-L.** Structural studies using cryo-EM to unravel mechanistic details of p47 binding to p97. *Biophys J* **118**, 501a (2020).
5. Luu, D., **Chiu, P.-L.**, and Van Horn, W.D. Isolation of functional temperature activated transmembrane domain of human TRPM8. *Biophys J* (2020).
4. Yang, J.-H., Fromme, P., and **Chiu, P.-L.** Mechanism of light regulation on chloroplast ATP synthase revealed by single-particle cryo-EM. *BBA-Bioenergetics* **1859**, e84-e85 (2018).
3. Leska, N., Liu, L., Goodman, A., **Chiu, P.-L.**, Walz, T., Peters, R., and Kulman, J. Evidence for flexible tethering of Fc to FVIII in recombinant FVIII-Fc fusion protein rFVIIIFc. *Blood* **122**, 1102 (2013).
2. **Chiu, P.-L.**, Pagel, M., Evans, J., Chou, H.-T., Zeng, X., Gipson, B., Nimigean, C., and Stahlberg, H. Structural analysis of the cyclic nucleotide modulated potassium channel MloK1. *Microsc & Microana* **13**, 412-413 (2007).
1. Stahlberg, H., Zhang, Z.Y., Gipson, B., Hill, R., Chou, H.-T., **Chiu, P.-L.**, Renault, L., and Zeng, X. High throughput membrane protein structure determination by electron crystallography. *Abstr Pap Am Chem Soc* **231** (2006).

PRESENTATIONS

Seminars and talks

11/2025 Seminal talk, Center for Biological Physics (CBP), Arizona State University, Tempe, AZ
"*Cryo-EM perspective on the Daphnia ribosome structures*" (**invited talk**)

11/2025 Chalk talk, Center for Biological Physics (CBP), Arizona State University, Tempe, AZ
(**invited talk**)

"*From snapshots to motion: electron imaging reveals biomolecular mechanisms*"

06/2025 Seminal talk, Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan (**invited talk**)
"*Revealing structural dynamics of biomolecular complexes using electron imaging*"

06/2025 Seminal talk, Department of Pharmacy, National Yang-Ming Chiao-Tung University, Taipei, Taiwan (**invited talk**)
"*Mechanism of allosteric control in human p97 ATPase and its disease mutants*"

03/2025 Seminal talk, Department of Cell and Biological Systems, Pennsylvania State University College of Medicine, Hershey, PA (**invited talk**)
"*Mechanism of allosteric control in human p97 ATPase and its disease mutants*"

10/2024 Chalk Talk Series, Biodesign Institute, Tempe, AZ
"*Probing structures and dynamics of protein assemblies using electron imaging*"

08/2023 Seminal talk, School of Molecular Sciences, Arizona State University, Tempe, AZ
"*Unraveling biomolecular complexity using cryo-EM*"

06/2023 Seminal talk, Department of Life Sciences, National Tsing Hua University, Hsinchu, Taiwan (**invited talk**)
"*Visualizing molecular assembly dynamics using electron imaging*"

05/2022 Seminal talk, Center for Mechanism of Evolution (CME) Joint Lab Meeting, Tempe, AZ
"*Probing biomolecular mechanisms of energy transduction using cryo-EM*"

01/2022 Seminal talk, Biophysics Seminar, University of California, Davis, CA (**invited talk**)
"*Structural and functional analysis on the p97 disease mutant complexes*"

11/2021 Seminal talk, Pharmacological Sciences Seminar, Stonybrook University, Stonybrook, NY (**invited talk**)
"*Structural and functional characterization of p97 disease mutant complexes*"

04/2021 Seminal talk, BMB Seminar, University of Texas Health Science Center at Houston, TX (**invited talk**)
"*Structural and functional analysis of disease-linked p97 ATPase mutant complexes*"

01/2018 Chalk Talk Series, Biodesign Institute, Tempe, AZ
"*Use electrons to image biological molecules in their native-like environment*"

12/2017 Seminal talk, University of California, Los Angeles Harbor Medical School, Torrance, CA (**invited talk**)
"*Probing membrane protein structures in their native-like environment using cryo-EM*"

09/2017 Center for Biophysical Seminar Series, Department of Physics, Tempe, AZ
"*Probing membrane protein structures in their native-like environment using cryo-EM*"

04/2016 Department of Biological Sciences, Purdue University, West Lafayette, IN (**invited talk**)

02/2016 Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan (**invited talk**)

02/2016 Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan (**invited talk**)
"*Probing lipid-protein interaction using cryo-electron microscopy*"

03/2014 "Pizza Talk" Series, Department of Cell Biology, Harvard Medical School, Boston, MA

06/2012 Institute of Chemistry, Academia Sinica, Taipei, Taiwan (**invited talk**)
"*Probing lipid-protein interaction using cryo-electron microscopy*"

06/2012 Department of Life Sciences, National Yang-Ming University, Taipei, Taiwan (**invited talk**)

Conferences and meetings (oral presentations)

07/2026 2026 VCP International Scientific & Community Summit, Atlanta, GA (**invited talk**)
"*Cryo-EM insights into the allosteric regulatory mechanism of p97/VCP ATPase*"

04/2026 Biodesign Retreat Breakout session (**invited talk**)
"*Sharper Electron Images: Energy Filtering for Cryo-EM*"

12/2025 The 6th International Symposium on Advanced Microscopy and Spectroscopy (ISAMS-6), Irvine, CA (**invited talk**)
"*Cryo-EM structural insights into GSB energy transfer pathways and architecture*"

07/2025 Gordon Research Conference – Photosynthesis, Newry, ME (**invited talk**)
"*Mechanism of dynamic assembly of plant Rubisco activase*"

01/2024 The Western Photosynthesis Conference (WPC), Biosphere 2, Oracle, AZ (**invited talk**)
"*Molecular regulatory mechanism of light transfer in* Chlorobaculum tepidum"

12/2023 Mini-symposium of "*Frontier in Membrane Protein Structure and Function*", National Yang Ming Chiao Tung University, Taipei, Taiwan (**invited talk**)
"*Revealing biomembrane dynamics: insights from visualizing molecular interactions using cryo-EM*"

01/2023 The 2023 Structural Biology Summit Meeting, Los Angeles, CA (**invited talk**)
"*Probing the architecture for a photosynthetic machinery from photosynthetic bacteria*"

10/2022 Spence Memorial Symposium, Tempe, AZ
"*Cryogenic electron imaging reveals structural asymmetry of green sulfur bacterial photosynthetic supercomplex*"

07/2022 International Congress on Photosynthesis Research 2022 (ICPR), New Zealand (**invited talk**)
Reaction Centers: Structure and Function, "*Molecular asymmetry of the photosynthetic supercomplex in Chlorobaculum tepidum*"

09/2021 2021 VCP Scientific Conference, Main Stage speaker, virtual format
"*Structural and functional analysis of disease-linked p97 ATPase mutant complexes*"

08/2021 American Crystallography Association (ACA) Annual Meeting – Redox Enzymes session, virtual format
"*Redox modulation of chloroplast ATP synthase*"

08/2020 2020 Microscopy and Microanalysis Society (M&M), virtual format
"*Redox Modulation on Chloroplast ATP Synthase*"

03/2019 ASU Biodesign Retreat FUSION 2019, Phoenix, AZ (**invited talk**)
"*Structural studies of a cofactor-bound p97 disease mutant*"

08/2018 EMSL Integration Meeting 2018, Richland, WA (**invited talk**)
Session of "Molecular Structure and Dynamics in Biology and the Environment"
"*Probing membrane protein structures in their native-like environment using cryo-EM*"

01/2017 10th International Conference on Computational Physics, Macau, China (**invited talk**)
"*Probing lipid-protein interaction using cryo-electron microscopy*"

08/2015 EITC 2015, Massachusetts Institute of Technology, Cambridge, MA (**invited talk**)
"*Probing membrane protein structures in their native-like environment using cryo-EM*"

08/2007 Center for Structures of Membrane Proteins (CSMP), UCSF, San Francisco, CA

05/2007 Bay Area Cryo-EM Meeting, Davis, CA

Poster presentations

07/2025 Gordon Research Conference – Photosynthesis, Newry, Maine
"*Studying the adaptive mechanism of green sulfur bacteria to light conditions: insights into molecular and cellular strategies*"

02/2023 2023 Biophysical Annual Meeting, San Diego, CA
"*Structural Basis for Excited Light Transfer within Bacterial Photosynthetic Supercomplex*"

02/2022 2022 Biophysical Annual Meeting, San Francisco, CA
"*Evaluation of hollow-cone electron imaging on biomolecules*"

01/2012 Gordon Research Conference on Ligand Recognition & Molecular Gating, Ventura, CA

06/2007 Gordon Research Conference on Mechanisms of Membrane Transport, Tilton, NH

09/2005 The National Resource for Automated Molecular Microscopy, The Scripps Research Institute, La Jolla, CA

RESEARCH SUPPORTS

Current

Unraveling the aged tau species that develop as a consequence of normal aging

Arizona Alzheimer's Consortium | 07/2025 – 06/2027
PI: Jui-Heng Tseng; Co-I: Po-Lin **Chiu**

Investigating assembly dynamics of a bacterial photosynthetic system and its impact on light-harvesting efficiency

NSF MCB (2317015) | 08/2023 – 07/2027
PI: Po-Lin **Chiu**; Co-PI: Haijun Liu (SLU); Co-I: Brent Nannenga & Yuval Mazor

Completed

Electron energy filtering system for cryo-EM imaging

NIH (1S10OD036204-01) | 08/2024 – 07/2025
PI: Po-Lin **Chiu**

SISGR: The regulation of carbon fixation in plant and green algae: Rubisco activase and the origin of heat inactivation of CO_2 assimilation

US Department of Energy (DE-SC0002423) | 09/2018 – 09/2024
PI: Po-Lin **Chiu**; Co-PI: Quan Wang (NIH NIDDK)

Quantum biology studied by TEM

Army Research Office (W911NF2010321) | 09/2020 – 08/2024
PI: Po-Lin **Chiu**; Co-PI: Brent Nannenga

Structural investigation of the integrin $\alpha_v\beta_8$ in its role in TGFβ activation

Morphic Therapeutics, Inc. | 07/2019 – 06/2024
PI: Po-Lin **Chiu**

RAPID: IIBR: Instrumentation: Time-resolved studies of the SARS-CoV2 endonuclease NP15

NSF (2031343) | 05/2020 – 04/2023

PI: Petra Fromme; Co-I: Po-Lin **Chiu**

16X118TO2 (MEDD)

NIH NCI-Leidos Biomedical Research-NeXT Project | 07/2019 – 10/2020
PI: Petra Fromme; Co-I: Po-Lin **Chiu** & Brent Nannenga

MRI: Acquisition of an energy-filtering, direct electron detector for advanced soft and hard materials research with in situ *transmission electron microscopy*

NSF (1920335) | 09/2019 – 08/2021
PI: Peter Crozier; Co-I: Po-Lin **Chiu**

Cryo-ET imaging of C. metallidurans and O. tauri

Pacific Northwest National Laboratory | 08/2018 – 09/2018
PI: Po-Lin **Chiu**

TEACHING

List of courses taught at ASU (undergraduate-level courses are highlighted in light gray)

Course	*Year*	*Semester*	*Credit hours*	*Enrollment*	*Students' evaluation (number of respondents) (5: excellent)*
Biophysical Chemistry (BCH 463)	2026	Fall	3	N/A	N/A
Biophysical Chemistry (BCH 463) (Honors contracts: 2)	2026	Spring	3	73	4.0 ± 0.2 (42)
Undergraduate Research (BCH/CHM 392)	2026	Spring	3	1	N/A
Biophysical Chemistry (BCH 463)	2025	Fall	3	35	4.3 ± 0.8 (20)
Undergraduate Research – Honors Directed Research (BCH 492)	2025	Spring	3	2	N/A
Biophysical Chemistry (BCH 463)	2024	Fall	3	30	4.4 ± 0.7 (22)
Undergraduate Research – Honors Directed Research (BCH 492)	2024	Fall	3	2	
Structure Discovery in Biophysical Chemistry (BCH 494/598)	2024	Spring	3	14	4.1 ± 0.5 (7)
Biophysical Chemistry (BCH 463) (Honors contract: 1)	2024	Spring	3	92	3.9 ± 0.9 (30)
Biophysical Chemistry (BCH 463)	2023	Fall	3	35	4.4 ± 0.8 (13)
Electron Microscopy of Biological Macromolecules (BCH 494/598)	2023	Spring	3	25	4.4 ± 0.9 (23)
Biophysical Chemistry (BCH 463)	2022	Fall	3	36	4.6 ± 0.8 (20)
Undergraduate Research (BCH 492)	2022	Fall	3	1	
Biophysical Chemistry (BCH 463)	2022	Spring	3	99	4.3 ± 1.0 (79)
Undergraduate Research (BCH 493)	2022	Spring	3	1	N/A

Undergraduate Research (BIO 495)	2022	Spring	3	1	N/A
Undergraduate Research (BCH 392)	2022	Spring	3	1	N/A
Undergraduate Research (BCH 392)	2021	Fall	3	2	N/A
Undergraduate Research (BCH 492)	2021	Fall	3	1	N/A
Biophysical Chemistry (BCH 463) [b]	2021	Spring	3	110	4.6 ± 0.7 (92)
Undergraduate Research (BCH 392)	2021	Spring	2/3	2	N/A
Biophysical Chemistry (BCH 463) [b]	2020	Fall	3	31	4.5 ± 0.8 (18)
Biophysical Chemistry (BCH 463)	2020	Spring	3	93	4.4 ± 1.0 (36)
Undergraduate Research (BCH 392)	2020	Spring	3	1	N/A
Elementary Biochemistry Laboratory (BCH 367)	2019	Fall	1	215	N/A
Elementary Biochemistry Laboratory (BCH 367)	2019	Spring	1	137	3.9 ± 1.1 (35)
Structural Discovery in Biophysical Chemistry (BCH 494/598)	2018	Fall	3	14	5.0 ± 0.0 (1)
Current Topics in Biochemistry (CHM 501)	2018	Fall	1	23	5.0 ± 0.0 (5)
Elementary Biochemistry Laboratory (BCH 367)	2018	Spring	1	148	4.1 ± 1.1 (62)
Electron Microscopy of Biological Macromolecules (BCH 598)	2017	Fall	3	14	5.0 ± 0.0 (3)
Electron Microscopy of Biological Macromolecules (BCH 598) [a]	2016	Fall	3	5	4.0 ± 1.3 (2)

[a] A new class developed at ASU.
[b] Teaching online due to the COVID pandemic impact.

MENTORING ACTIVITIES

Postdoctoral researchers

Yu-Ping **Poh** 08/2016 – 10/2020
Jay-How **Yang** 03/2017 – 07/2019

Graduate students

Kira **DeVore** Biochemistry (2022 Fall – present)
Edgar **Ferrer** Biochemistry (2022 Fall – present)
Ryan **Puskar** Biochemistry (2020 Fall – 2024 Fall)
Ka-Yi (Tina) **Chan** Biochemistry (2018 Fall – 2024 Summer)
Kazi **Waheeda** Biochemistry (2018 Fall – 2024 Summer)
Heidi Joanne **Kitchel** Biochemistry Master Program (2022 Fall – 2024 Spring)
Purbasha **Nandi** Biochemistry Ph.D. (2016 Fall – 2022 Spring)

Chloe Du **Truong**	Biochemistry Ph.D. (2017 Fall – 2021 Fall)
Isabella **Breen**	Biochemistry M.Sc. (2019 Fall – 2020 Fall)

PROFESSIONAL SERVICES

Membership

2025 – 2027	Elemental Member, American Association for The Advancement of Science
2021 – 2025	Member, American Chemical Society (ACS)
2021 – present	Member, American Crystallographic Association (ACA)
2016 – present	Member, Arizona Imaging and Microanalysis Society (AIMS)
2014 – 2015, 2023 – 2026	Elemental Member, The American Association for the Advancement of Science (AAAS)
2009 – 2011, 2017 – present	Member, Biophysical Society
2022	Member, International Society of Photosynthesis Research (ISPR)
2020 – present	Member, Microscopy Society of America (MSA)
2020 – 2021	Member, Sigma Xi

Conference and workshop activities

2026 ASU Biodesign FUSION Judge committee for abstracts and posters

2025 Cyanobacteria and Algae Research and Education (CARE) Workshop, Montgomery, AL – abstract reviewer and award committee member

2025 ASU Biodesign FUSION Judge committee for abstracts and posters

2024 Western Photosynthesis Conference session chair

2022 Biodesign FUSION Scientific Breakout session chair

2021 Biophysical Society SRAA Virtual Platform Judge – 2021 BPS Meeting

2019 ASU Regional Academic Collaborations (ReACt) Bio Security & Mechanism Workshop – session leader and discussion group

2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM) – session chair

2018 ASU HREM Winter School – Cryo-EM Workshop – Organizer and instructor

2017 ASU HREM Winter School – Cryo-EM Workshop – Organizer and instructor

2008 International Workshop on Electron Crystallography of Membrane Proteins, UC Davis – Hands-on instructor on electron diffraction and 2D crystal sample preparation

2006 Electron Crystallography Workshop, UC Davis – Hands-on instructor on 2D crystal sample preparation

UNIVERSITY SERVICES AND OUTREACH ACTIVITIES

University services

2026 – present	ASU SMS P&B Committee
2023 – present	ASU SMS Space Committee
2022 – present	ASU SMS Committee on Undergraduate Programs and Awards
2018 – present	ASU Biodesign Laboratory Safety Committee
2016 – present	John M. Cowley Center for High-Resolution Electron Microscopy (JCCHREM) Steering Committee
2023 – 2026	NSF BII internal advisory committee – ASU Biodesign Center for Mechanisms of Cellular Evolution
2018 – 2021	ASU Eyring Materials Characterization & Synthesis Governance Board
2021 – 2022	ASU SMS Committee on Undergraduate Student Research
2020 – 2021	ASU SMS Lecturer Search Committee
2018 – 2021	ASU SMS Committee on Graduate Recruitment

Outreach activities and media coverage

08/2025 – Research opportunity for Arizona high-school students

07/2024 – Biosense Network for outreaching local Chandler high-school students, Tempe, AZ

02/2024 – The Open Door by the ASU Biodesign Institute, Tempe, AZ

02/2023 – The Open Door by the ASU Biodesign Institute, Tempe, AZ

12/2021 – Arizona ABC 15
ASU researchers may have found cause of blood clots after AstraZeneca COVID vaccine

12/2021 – BBC News, UK
Covid: Trigger of rare blood clots with AstraZeneca jab found by scientists

12/2021 – Science Daily, Rockville, MD
Potential mechanism behind rare vaccine-related clotting disorder

11/2021 – ASU News, Tempe, AZ
Freeze frame: Scientists use new electron microscope to explore the mysteries of life

07/2021 – ASU News, Tempe, AZ
Researchers at ASU's School of Molecular Sciences, Biodesign Institute, Mayo Clinic unravel DNA repair mechanism

02/2020 – The Open Door by the ASU Biodesign Institute, Tempe, AZ

06/2019 – Space Daily
ASU team throws new light on photosynthetic supercomplex structure

12/2017 – "Life and Technology Talk Show", the Radio Golden Vintage, Los Angeles, CA
Using electron microscopy to understand structures of biological molecules

02/2017 – The Night of the Open Door by the ASU Biodesign Institute