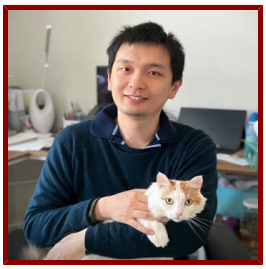
Stanford



Muyuan Chen

Staff Sci - CryoEM/ET Comp, Stanford Synchrotron Radiation Lightsource

NIH Biosketch available Online

Publications

PUBLICATIONS

- **Molecular Basis for Asynchronous Chain Elongation During Rifamycin Antibiotic Biosynthesis.** *bioRxiv : the preprint server for biology*
  Liu, C., West, R. C., Chen, M., Cohn, W., Wang, G., Mandot, A. M., Kim, S., Cogan, D. P.
  2025
- **Building molecular model series from heterogeneous CryoEM structures using Gaussian mixture models and deep neural networks.** *Communications biology*
  Chen, M.
  2025; 8 (1): 798
- **Structural basis for intermodular communication in assembly-line polyketide biosynthesis.** *Nature chemical biology*
  Cogan, D. P., Soohoo, A. M., Chen, M., Liu, Y., Brodsky, K. L., Khosla, C.
  2024
- **Rendering protein structures inside cells at the atomic level with Unreal Engine.** *bioRxiv : the preprint server for biology*
  Chen, M.
  2024
- **Correction: Jiménez-Ortigosa et al. Cryo-Electron Tomography of Candida glabrata Plasma Membrane Proteins. J. Fungi 2021, 7, 120.** *Journal of fungi (Basel, Switzerland)*
  Jiménez-Ortigosa, C., Jiang, J., Chen, M., Kuang, X., Healey, K. R., Castellano, P., Boparai, N., Ludtke, S. J., Perlin, D. S., Dai, W.
  2024; 10 (3)
- **Centriole and transition zone structures in photoreceptor cilia revealed by cryo-electron tomography.** *Life science alliance*
  Zhang, Z., Moye, A. R., He, F., Chen, M., Agosto, M. A., Wensel, T. G.
  2024; 7 (3)
- **Cryogenic electron microscopy and tomography reveal imperfect icosahedral symmetry in alphaviruses.** *PNAS nexus*
  Chmielewski, D., Su, G. C., Kaelber, J. T., Pintilie, G. D., Chen, M., Jin, J., Auguste, A. J., Chiu, W.
  2024; 3 (3): pgae102
- **Genome organization in double-stranded DNA viruses observed by cryoET.** *bioRxiv : the preprint server for biology*
  Chen, M., Sahoo, B., Mou, Z., Song, X., Tsai, T., Dai, X.
  2023
- **Targeted mutagenesis of the herpesvirus fusogen central helix captures transition states.** *Nature communications*
  Zhou, M., Vollmer, B., Machala, E., Chen, M., Grünewald, K., Arvin, A. M., Chiu, W., Oliver, S. L.
  2023; 14 (1): 7958
- **Improving resolution and resolvability of single-particle cryoEM structures using Gaussian mixture models.** *Nature methods*
  Chen, M., Schmid, M. F., Chiu, W.
  2023

- **Structural insights into the modulation of coronavirus spike tilting and infectivity by hinge glycans.** *Nature communications*
  Chmielewski, D., Wilson, E. A., Pintilie, G., Zhao, P., Chen, M., Schmid, M. F., Simmons, G., Wells, L., Jin, J., Singharoy, A., Chiu, W.
  2023; 14 (1): 7175
- **Author Correction: Membrane translocation process revealed by in situ structures of type II secretion system secretins.** *Nature communications*
  Yu, Z., Wu, Y., Chen, M., Huo, T., Zheng, W., Ludtke, S. J., Shi, X., Wang, Z.
  2023; 14 (1): 4833
- **Membrane translocation process revealed by in situ structures of type II secretion system secretins.** *Nature communications*
  Yu, Z., Wu, Y., Chen, M., Huo, T., Zheng, W., Ludtke, S. J., Shi, X., Wang, Z.
  2023; 14 (1): 4025
- **Integrating Molecular Models Into CryoEM Heterogeneity Analysis Using Scalable High-resolution Deep Gaussian Mixture Models** *JOURNAL OF MOLECULAR BIOLOGY*
  Chen, M., Toader, B., Lederman, R.
  2023; 435 (9): 168014
- **Integrated analyses reveal a hinge glycan regulates coronavirus spike tilting and virus infectivity.** *Research square*
  Chmielewski, D., Wilson, E. A., Pintilie, G., Zhao, P., Chen, M., Schmid, M. F., Simmons, G., Wells, L., Jin, J., Singharoy, A., Chiu, W.
  2023
- **Molecular architecture of the Chikungunya virus replication complex.** *Science advances*
  Tan, Y. B., Chmielewski, D., Law, M. C., Zhang, K., He, Y., Chen, M., Jin, J., Luo, D.
  2022; 8 (48): eadd2536
- **Conformational motions and ligand-binding underlying gating and regulation in IP3R channel.** *Nature communications*
  Fan, G., Baker, M. R., Terry, L. E., Arige, V., Chen, M., Seryshev, A. B., Baker, M. L., Ludtke, S. J., Yule, D. I., Serysheva, I. I.
  2022; 13 (1): 6942
- **Cryo-ET of Toxoplasma parasites gives subnanometer insight into tubulin-based structures.** *Proceedings of the National Academy of Sciences of the United States of America*
  Sun, S. Y., Segev-Zarko, L., Chen, M., Pintilie, G. D., Schmid, M. F., Ludtke, S. J., Boothroyd, J. C., Chiu, W.
  2022; 119 (6)
- **In situ structure of the AcrAB-TolC efflux pump at subnanometer resolution.** *Structure (London, England : 1993)*
  Chen, M., Shi, X., Yu, Z., Fan, G., Serysheva, I. I., Baker, M. L., Luisi, B. F., Ludtke, S. J., Wang, Z.
  2022; 30 (1): 107-113.e3
- **The structure-function relationship of a signaling-competent, dimeric Reelin fragment.** *Structure (London, England : 1993)*
  Turk, L. S., Kuang, X., Dal Pozzo, V., Patel, K., Chen, M., Huynh, K., Currie, M. J., Mitchell, D., Dobson, R. C., D'Arcangelo, G., Dai, W., Comoletti, D.
  2021; 29 (10): 1156-1170.e6
- **Deep learning-based mixed-dimensional Gaussian mixture model for characterizing variability in cryo-EM.** *Nature methods*
  Chen, M., Ludtke, S. J.
  2021; 18 (8): 930-936
- **Preliminary Structural Elucidation of β-(1,3)-glucan Synthase from Candida glabrata Using Cryo-Electron Tomography.** *Journal of fungi (Basel, Switzerland)*
  Jiménez-Ortigosa, C., Jiang, J., Chen, M., Kuang, X., Healey, K. R., Castellano, P., Boparai, N., Ludtke, S. J., Perlin, D. S., Dai, W.
  2021; 7 (2)
- **Structural Insights of Transcriptionally Active, Full-Length Androgen Receptor Coactivator Complexes.** *Molecular cell*
  Yu, X., Yi, P., Hamilton, R. A., Shen, H., Chen, M., Foulds, C. E., Mancini, M. A., Ludtke, S. J., Wang, Z., O'Malley, B. W.
  2020; 79 (5): 812-823.e4
- **Structural basis of amino acid surveillance by higher-order tRNA-mRNA interactions.** *Nature structural & molecular biology*
  Li, S., Su, Z., Lehmann, J., Stamatopoulou, V., Giarimoglou, N., Henderson, F. E., Fan, L., Pintilie, G. D., Zhang, K., Chen, M., Ludtke, S. J., Wang, Y., Stathopoulos, et al
  2019

- **Structural and functional analyses of photosystem II in the marine diatom Phaeodactylum tricornutum.** *Proceedings of the National Academy of Sciences of the United States of America*
  Levitan, O., Chen, M., Kuang, X., Cheong, K. Y., Jiang, J., Banal, M., Nambiar, N., Gorbunov, M. Y., Ludtke, S. J., Falkowski, P. G., Dai, W.
  2019; 116 (35): 17316-17322

- **Stimulus-responsive self-assembly of protein-based fractals by computational design.** *Nature chemistry*
  Hernández, N. E., Hansen, W. A., Zhu, D., Shea, M. E., Khalid, M., Manichev, V., Putnins, M., Chen, M., Dodge, A. G., Yang, L., Marrero-Berríos, I., Banal, M., Rechani, et al
  2019; 11 (7): 605-614

- **In situ structure and assembly of the multidrug efflux pump AcrAB-TolC.** *Nature communications*
  Shi, X., Chen, M., Yu, Z., Bell, J. M., Wang, H., Forrester, I., Villarreal, H., Jakana, J., Du, D., Luisi, B. F., Ludtke, S. J., Wang, Z.
  2019; 10 (1): 2635

- **A complete data processing workflow for cryo-ET and subtomogram averaging.** *Nature methods*
  Chen, M. n., Bell, J. M., Shi, X. n., Sun, S. Y., Wang, Z. n., Ludtke, S. J.
  2019

- **Automation and assessment of de novo modeling with Pathwalking in near atomic resolution cryoEM density maps.** *Journal of structural biology*
  Chen, M., Baker, M. L.
  2018; 204 (3): 555-563

- **New software tools in EMAN2 inspired by EMDatabank map challenge.** *Journal of structural biology*
  Bell, J. M., Chen, M., Durmaz, T., Fluty, A. C., Ludtke, S. J.
  2018; 204 (2): 283-290

- **Visualizing Individual RuBisCO and Its Assembly into Carboxysomes in Marine Cyanobacteria by Cryo-Electron Tomography** *JOURNAL OF MOLECULAR BIOLOGY*
  Dai, W., Chen, M., Myers, C., Ludtke, S. J., Pettitt, B., King, J. A., Schmid, M. F., Chiu, W.
  2018; 430 (21): 4156–67

- **Flagellum couples cell shape to motility in Trypanosoma brucei.** *Proceedings of the National Academy of Sciences of the United States of America*
  Sun, S. Y., Kaelber, J. T., Chen, M., Dong, X., Nematbakhsh, Y., Shi, J., Dougherty, M., Lim, C. T., Schmid, M. F., Chiu, W., He, C. Y.
  2018; 115 (26): E5916–E5925

- **Flagellum couples cell shape to motility in Trypanosoma brucei** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Sun, S. Y., Kaelber, J. T., Chen, M., Dong, X., Nematbakhsh, Y., Shi, J., Dougherty, M., Lim, C., Schmid, M. F., Chiu, W., He, C. Y.
  2018; 115 (26): E5916–E5925

- **Electron Cryo-microscopy Structure of Ebola Virus Nucleoprotein Reveals a Mechanism for Nucleocapsid-like Assembly** *Cell*
  Su, Z., et al
  2018; 172 (5): 966-978

- **Structure of the 30 kDa HIV-1 RNA Dimerization Signal by a Hybrid Cryo-EM, NMR, and Molecular Dynamics Approach** *Structure of the 30 kDa HIV-1 RNA Dimerization Signal by a Hybrid Cryo-EM, NMR, and Molecular Dynamics Approach*
  Zhang, K., keane, S. C., Su, Z., robalieva, R., Chen, M., Sciandra, C. A., Marchant, J., Heng, X., Schmid, M. F., Case, D. A., Ludtke, S. J., Summers, M. F., Chiu, et al
  2018; 26 (3): 490-498

- **Convolutional neural networks for automated annotation of cellular cryo-electron tomograms.** *Nature methods*
  Chen, M., Dai, W., Sun, S. Y., Jonasch, D., He, C. Y., Schmid, M. F., Chiu, W., Ludtke, S. J.
  2017; 14 (10): 983-985

- **De Novo modeling in cryo-EM density maps with Pathwalking.** *Journal of structural biology*
  Chen, M., Baldwin, P. R., Ludtke, S. J., Baker, M. L.
  2016; 196 (3): 289-298

- **High resolution single particle refinement in EMAN2.1.** *Methods (San Diego, Calif.)*

Bell, J. M., Chen, M., Baldwin, P. R., Ludtke, S. J.
2016; 100: 25-34

- **Structural diversity of supercoiled DNA.** *Nature communications*
  Irobalieva, R. N., Fogg, J. M., Catanese, D. J., Sutthibutpong, T., Chen, M., Barker, A. K., Ludtke, S. J., Harris, S. A., Schmid, M. F., Chiu, W., Zechiedrich, L.
  2015; 6: 8440