Daoyi Li

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EDUCATION

Uppsala University **Uppsala, Sweden**

B.S. in Program of Biology 2016-2017

- Cumulative GPA 4/5

Shandong University **Jinan, China**

B.S. in Biological Science (Honor Class of Taishan college) 2014-2018

- Cumulative GPA 3.93/4 (WES), 88.99/100

Purdue University **West Lafayette, USA**

Ph.D. Candidate in the department of Biological science, structural and computation biology 2019 -present

Publication

In preparation:

Li, D., Zhang, X., Jiang, W. Helicon: Estimating the essential information for helical reconstruction from the image and position information of the 2D classification. (Finish writing, doing proofreading)

Li, D., Munoz Perez, M., Zhang, X., Li, J., Jiang, W. Curating the helical parameter of the structure in EMDB (Writing)

Publication:

Hoq, M.R., Fernandez, A., Vago, F.S., Hallinan, G.I., Bharath, S.R., **Li, D.**, Ozcan, K.A., Garringer, H.J., Jiang, W., Vidal, R. and Ghetti, B., 2024. Cryo-EM structures of cotton wool plaques' amyloid β and of tau filaments in dominantly inherited Alzheimer disease. Acta Neuropathologica, 148(1), p.20.

Fernandez, A., Hoq, M.R., Hallinan, G.I., **Li, D.**, Bharath, S.R., Vago, F.S., Zhang, X., Ozcan, K.A., Newell, K.L., Garringer, H.J. and Jiang, W., 2024. Cryo-EM structures of amyloid-β and tau filaments in Down syndrome. Nature Structural & Molecular Biology, pp.1-7.

Li, D., & Jiang, W. (2023). Classification of helical polymers with deep-learning language models. Journal of Structural Biology, 108041.

Zhang, X., Bharath, S. R., **Li, D.**, & Jiang, W. (2023). Maximize Access to Cryo-EM Learning and Research Tools with Web Apps.

Hoq, M.R., Bharath, S.R., Hallinan, G.I., Fernandez, A., Vago, F.S., Ozcan, K.A., **Li, D.**, Garringer, H.J., Vidal, R., Ghetti, B. and Jiang, W., 2023. Cross-β helical filaments of Tau and TMEM106B in Gray and White Matter of Multiple System Tauopathy with presenile Dementia. Acta Neuropathologica, 145(5), pp.707-710.

Hallinan, G.I., Ozcan, K.A., Hoq, M.R., Cracco, L., Vago, F.S., Bharath, S.R., **Li, D.**, Jacobsen, M., Doud, E.H., Mosley, A.L. and Fernandez, A., 2022. Cryo-EM structures of prion protein filaments from Gerstmann–Sträussler–Scheinker disease. Acta Neuropathologica, 144(3), pp.509-520.

Dong, J., **Li, D.**, Ozcan, K., Wan, D., Jiang, W., & Chen, Y. (2022). Development of CryoVR, a virtual reality training system for hands-on cryoEM operations. Acta Crystallographica Section D: Structural Biology, 78(7).

González, B., Li, D., Li, K., Wright, E.T., Hardies, S.C., Thomas, J.A., Serwer, P. and Jiang, W., 2021. Structural studies of the phage G tail demonstrate an atypical tail contraction. Viruses, 13(10), p.2094.

Research experience

Designing the deep learning pipeline to resolve the heterogeneity of the helical cryoEM image

- Apply different language models (transformer, n-gram) to cluster different helical cryoEM image after 2D classification.
- Using contrast learning scheme to utilize the prior information of helical image.

Help building CryoVR—a virtual reality training system for hands-on operation.

- Building 3D model for the VR environment.
- Designing the algorithm for detecting the wrong steps in the process of VR operation.

Resolving the amyloid structure

- Familiar with the process of helical reconstruction in the Relion and cryosparc

- Understand the process of amyloid structure determination.

LANGUAGES/SKILLS

- Languages: Chinese (Native), English (Fluent)
- Programming skills: Python, Pytorch, latex, C++ (intermediate, mostly in the unreal engine)
- Software: Relion, cryosparc, EMAN, Maya, blender, Unreal Engine