# GINA EL NESR

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## EDUCATION

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|---|---|
| 2021-Present | Ph.D. in Biophysics, Stanford University (expected 2025) |
| 2021 | B.S. in Computer Science<br>B.A. in Biophysics<br>B.S. in Applied Math & Statistics<br>Johns Hopkins University (JHU), general honors |
| 2017 | Massachusetts Academy of Math and Science at WPI |

## AWARDS AND HONORS

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| 2024 | Stanford Fellowship to the 20$^{th}$ Frontiers in Biophysics Conference |
| 2024 | Stanford Office of Graduate Education Travel Award for ICLR |
| 2023 | DESRES Graduate and Postdoctoral Women's Fellowship |
| 2023 | Keystone Travel Award for the Comp. Design & Modeling of Biomolecules |
| 2022 | NSF Graduate Research Fellowship Program (GRFP) Fellow |
| 2020 | Institute for Data Intensive Engineering and Science (IDIES) Student Summer Research Fellowship |
| 2019 | Jason HP and Beverly N. Kravitt Fund Fellow - *Named Scholar Distinction* |
| 2018 | Woodrow Wilson Research Fellowship |
| 2017 | Charles O' Thompson Scholarship |

## EMPLOYMENT

### *Academic Positions*

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|---|---|
| 2021-Present | Graduate Student, Stanford University<br>Advisor: Possu Huang |
| 2019-2021 | Undergraduate Research Assistant, Dept of Biophysics, JHU<br>Advisor: Doug Barrick |
| 2018-2019 | Undergraduate Research Assistant, Dept of Biology and Dept of CS, JHU<br>Advisor: James Taylor |
| 2017-2018 | Undergraduate Research Assistant, Integrated Imaging Center, JHU<br>Advisor: Michael McCaffery |

### *Teaching Positions*

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|---|---|
| 2025 | Lead Instructor, Protein Design and Modeling using Machine Learning (BIOS 429)<br>Stanford University |
| 2023 | Teaching Assistant, Macromolecules (BIOPHYS 241)<br>Stanford University |

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| 2020-2021 | Teaching Assistant, Biophysical Chemistry (AS.250.372)<br>Biophysics Department at JHU |
| 2019-2021 | Teaching Team Assistant, Computer Science<br>The Center for Talented Youth at JHU |
| 2019-2020 | Teaching Lab Assistant, Protein Engineering & Biochemistry Lab (AS.250.253)<br>Biophysics Department at JHU |
| 2018 | Teaching Assistant, Physics II for Physical Science Majors (AS.171.108)<br>Physics Department at JHU |
| 2016,17 | Summer Camp Counselor at Math Quest & Computer Quest<br>Mass Academy at WPI (Worcester, MA) |

***Industry Positions***

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| 2018 | Intern - Process Development: Analytical Development, Shire/Takeda (Lexington, MA) |
| 2017 | Intern - Software Development, Senscio Systems (Harvard, MA) |

## ACADEMIC CONFERENCES

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| 2025 | Protein structure prediction and design, Poster Presentation (exp Sept ’25) |
| 2025 | GRC: Computational Aspects of Biomolecular NMR, Poster Presentation (exp June ’25) |
| 2024 | Antibody Engineering: Strategies for Design & Optimization, Invited Speaker |
| 2024 | ICLR – GEMBio Workshop, Poster Presentation |
| 2023 | DE Shaw Research Graduate & Post-doctoral Symposium, Flash Talk |
| 2023 | California Research Alliance (CARA) Spring Review, Keynote Speaker |
| 2023 | Keystone Conference: Comp. Design & Modeling of Biomolecules, Poster Presentation |
| 2023 | ML Protein Engineering Seminar Series, Invited Seminar Speaker |
| 2022 | California Research Alliance (CARA) Fall Review, Invited Speaker |
| 2022 | California Research Alliance (CARA) Spring Review, Invited Speaker |
| 2022 | exploreCSR: Democratize AI, Invited Panelist |
| 2021 | Johns Hopkins Woodrow Wilson Annual Symposium, Poster Presentation |
| 2021 | Richard Macksey Research Symposium, Invited Panelist |
| 2020 | 34th Gibbs Conference on Biological Thermodynamics, Poster Presentation |
| 2020 | Institute of Data Science and Engineering Annual Symposium, Poster Presentation |
| 2016 | American Association for the Advancement Science (Boston, MA), Poster Presentation |
| 2016 | American Junior Academy of Science (Boston, MA), Poster Presentation |
| 2016 | International Sustainable World Engineering Energy Environment Project (Houston, TX) |

## ACADEMIC SERVICE

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| 2024-Present | Guest Editor for American Physical Society’s PRX Life |
| 2023-Present | NeurIPS – Machine Learning in Structural Biology, Program Organizer & Reviewer |

2024-Present ICML, Workshop Proposal Committee

2024-Present ICLR - Generative and Experimental Perspectives for Biomolecular Design, Reviewer

## CERTIFICATIONS

2022 NVIDIA Deep Learning Institute – Fundamentals of Accelerated Computing with CUDA

## PUBLICATIONS

* = equal contribution between authors, § = authors listed in alphabetical order

[1] *Hannah K. Wayment-Steele, ***Gina El Nesr**, Ramith Hettiarachchi, Hasindu Piyumantha, Sergey Ovchinnikov, Dorothee Kern (2025) Learning millisecond protein dynamics from what is missing in NMR spectra. *bioRxiv.* https://www.biorxiv.org/content/10.1101/2025.03.19.642801v1

[2] Adonis A. Rubio, Viren A. Baharani, Bernadeta Dadonaite, Megan Parada, Morgan E. Abernathy, Zijun Wang, Yu E. Lee, Michael R. Eso, Jennie Phung, Israel Ramos, Teresia Chen, **Gina El Nesr**, Jesse D. Bloom, Paul D. Bieniasz, Michel C. Nussenzweig, Christopher O. Barnes. (202) Bispecific antibodies with broad neutralization potency against SARS-CoV-2 variants of concern. Science Translational Medicine. https://www.science.org/doi/abs/10.1126/scitranslmed.adq5720

[3] §Gabriele Corso, **§Gina El Nesr**, §Hannah K. Wayment-Steele (2024) Editorial: Machine Learning in Structural Biology. PRX Life. https://doi.org/10.1103/PRXLife.2.040001

[4] Haotian Du, Leena Mallik, Daniel Hwang, Yi Sun, Chengzi Kaku, Daniel Hoces, Shirley M. Sun, Reem Ghinnagow, Stephen D. Carro, Hoang Anh T Phan, Sagar Gupta, Wyatt Blackson, Hyejin Lee, Christian A. Choe, Devin Dersh, Jingjia Liu, Braxton Bell, Hongli Yang, Georgia F. Papadaki, Michael C. Young, Emily Zhou, **Gina El Nesr**, Kimia Dasteh Goli, Laurence C. Eisenlohr, Andy J. Minn, Rogelio A. Hernandez-Lopez, Joseph G. Jardine, Nikolaos G. Sgourakis, Po-Ssu Huang (2024) Targeting peptide antigens using multiallelic MHC I-binding system. Nature Biotechnology. https://doi.org/10.1038/s41587-024-02505-8

[5] *Christian Choe, ***Gina El Nesr**, Ana Espeleta, Rhiju Das, Po-Ssu Huang. (2024) 3D Inverse Design of RNA Using Deep Learning. ICLR. GEM Workshop.

[6] Alexander E. Chu, Jinho Kim, Lucy Cheng, **Gina El Nesr**, Minkai Xu, Richard Shuai, Po-Ssu Huang. (2024) An all-atom protein generative model. PNAS. https://doi.org/10.1073/pnas.2311500121

[7] *Autum R. Baxter-Koenigs, ***Gina El Nesr,** Doug Barrick. (2022) Singular value decomposition of protein sequences as a method to visualize sequence and residue space. Protein Science. https://doi.org/10.1002/pro.4422