Stanford

Yousuf Khan

Instructor, Molecular and Cellular Physiology

Resume available Online

Bio

BIO

I am a PhD student in Stanford Biosciences, department of Molecular and Cellular Physiology. I am broadly interested in basic molecular processes that occur in the cell and aim to delineate these mechanisms using biochemistry, molecular biology, bioinformatics and biophysics. I am also available as a consultant for bio-tech ventures.

ACADEMIC APPOINTMENTS

- Instructor, Molecular and Cellular Physiology

HONORS AND AWARDS

- Knight-Hennessy Fellowship, Stanford University (2019-2025)
- Stanford Graduate Fellowship, Stanford University (2019-2025)
- Graduate Research Fellowship Program, National Science Foundation (2019-2025)
- Winston Churchill Scholarship, Churchill Foundation (2018)
- Summa Cum Laude (4.0), University of Maryland, College Park (2018)
- Dean's List, University of Maryland, College Park (2014-2018)
- Integrated Life Sciences Honors Citation, University of Maryland, College Park (2016)
- J. Howard Brown Award, American Society for Microbiology (2018)
- University Medal Finalist, University of Maryland, College Park (2018)
- HHMI Undergraduate Research Fellowship, Howard Hughes Medical Institute/University of Maryland, College Park (2017,2018)
- Barry M. Goldwater Scholarship, Goldwater Foundation (2016)
- Dr. Laffer Award for Excellence in Research, University of Maryland, College Park (2016)
- Maryland Summer Scholars Fellowship, University of Maryland, College Park (2015,2016)
- Banneker/Key Scholarship, University of Maryland, College Park (2014)

PROFESSIONAL EDUCATION

- MPhil, University of Cambridge , Biology (Pathology) (2019)
- BSc, University of Maryland, College Park , Molecular and Cellular Physiology (2018)

Publications

PUBLICATIONS

- **Recent Structural Insights into the Molecular Architecture of Synapses.** *Advances in neurobiology*
  Brunger, A. T., Held, R. G., Khan, Y. A., Leitz, J., Liang, J., Wang, C., White, K. I.
  2026; 48: 11-37

- **Synaptobrevin-2 disease variants reveal spatial constraints within the presynaptic active zone.** *Proceedings of the National Academy of Sciences of the United States of America*
  Guzikowski, N. J., Bagatelas, E. D., Shin, O. H., Khan, Y. A., Esquivies, L., Alten, B., Brunger, A. T., Kavalali, E. T.
  2025; 122 (44): e2507347122

- **Programmed ribosomal frameshifting during PLEKHM2 mRNA decoding generates a constitutively active proteoform that supports myocardial function.** *Science advances*
  Loughran, G., De Pace, R., Ding, N., Zhang, J., Jungreis, I., Carancini, G., Mudge, J. M., Wang, J., Kellis, M., Atkins, J. F., Baranov, P. V., Firth, A. E., Li, et al
  2025; 11 (43): eady1742

- **Structural remodeling of target-SNARE protein complexes by NSF enables synaptic transmission.** *Nature communications*
  White, K. I., Khan, Y. A., Qiu, K., Balaji, A., Couoh-Cardel, S., Esquivies, L., Pfuetzner, R. A., Diao, J., Brunger, A. T.
  2025; 16 (1): 8371

- **SNARE disassembly requires Sec18/NSF side loading.** *Nature structural & molecular biology*
  Khan, Y. A., White, K. I., Pfuetzner, R. A., Singal, B., Esquivies, L., Mckenzie, G., Liu, F., DeLong, K., Choi, U. B., Montabana, E., Mclaughlin, T., Wickner, W. T., Brunger, et al
  2025

- **Simulating 500 million years of evolution with a language model.** *Science (New York, N.Y.)*
  Hayes, T., Rao, R., Akin, H., Sofroniew, N. J., Oktay, D., Lin, Z., Verkuil, R., Tran, V. Q., Deaton, J., Wiggert, M., Badkundri, R., Shafkat, I., Gong, et al
  2025: eads0018

- **Addendum: Accurate structure prediction of biomolecular interactions with AlphaFold 3.** *Nature*
  Abramson, J., Adler, J., Dunger, J., Evans, R., Green, T., Pritzel, A., Ronneberger, O., Willmore, L., Ballard, A. J., Bambrick, J., Bodenstein, S. W., Evans, D. A., Hung, et al
  2024

- **In-SituStructure and Topography of AMPA Receptor Scaffolding Complexes Visualized by CryoET.** *bioRxiv : the preprint server for biology*
  Held, R. G., Liang, J., Esquivies, L., Khan, Y. A., Wang, C., Azubel, M., Brunger, A. T.
  2024

- **Pre-fusion AAA+ remodeling of target-SNARE protein complexes enables synaptic transmission.** *bioRxiv : the preprint server for biology*
  White, K. I., Khan, Y. A., Qiu, K., Balaji, A., Couoh-Cardel, S., Esquivies, L., Pfuetzner, R. A., Diao, J., Brunger, A. T.
  2024

- **Programmed ribosomal frameshifting duringPLEKHM2mRNA decoding generates a constitutively active mediator of kinesin-1-dependent lysosome transport.** *bioRxiv : the preprint server for biology*
  Khan, Y. A., De Pace, R., Jungreis, I., Carancini, G., Mudge, J. M., Wang, J., Kellis, M., Atkins, J. F., Baranov, P. V., Firth, A. E., Bonifacino, J. S., Loughran, G.
  2024

- **Accurate structure prediction of biomolecular interactions with AlphaFold 3.** *Nature*
  Abramson, J., Adler, J., Dunger, J., Evans, R., Green, T., Pritzel, A., Ronneberger, O., Willmore, L., Ballard, A. J., Bambrick, J., Bodenstein, S. W., Evans, D. A., Hung, et al
  2024; 630 (8016): 493-500

- **Sensory deficit screen identifies nsf mutation that differentially affects SNARE recycling and quality control.** *Cell reports*
  Gao, Y., Khan, Y. A., Mo, W., White, K. I., Perkins, M., Pfuetzner, R. A., Trapani, J. G., Brunger, A. T., Nicolson, T.
  2023; 42 (4): 112345

- **Response to: Lack of evidence for ribosomal frameshifting in ATP7B mRNA decoding** *MOLECULAR CELL*
  Meydan, S., Klepacki, D., Karthikeyan, S., Margus, T., Thomas, P., Jones, J. E., Khan, Y. A., Briggs, J., Dinman, J. D., Vazquez-Laslop, N., Mankin, A. S.
  2022; 82 (19): 3523

- **Lack of evidence for ribosomal frameshifting in ATP7B mRNA decoding.** *Molecular cell*
  Loughran, G., Fedorova, A. D., Khan, Y. A., Atkins, J. F., Baranov, P. V.
  2022

- **Evaluating ribosomal frameshifting in CCR5 mRNA decoding.** *Nature*
  Khan, Y. A., Loughran, G., Steckelberg, A., Brown, K., Kiniry, S. J., Stewart, H., Baranov, P. V., Kieft, J. S., Firth, A. E., Atkins, J. F.
  2022; 604 (7906): E16-E23

- **Cryo-EM, Protein Engineering, and Simulation Enable the Development of Peptide Therapeutics against Acute Myeloid Leukemia.** *ACS central science*
  Zhang, K., Horikoshi, N., Li, S., Powers, A. S., Hameedi, M. A., Pintilie, G. D., Chae, H., Khan, Y. A., Suomivuori, C., Dror, R. O., Sakamoto, K. M., Chiu, W., Wakatsuki, et al
  2022; 8 (2): 214-222

- **The AAA+superfamily: a review of the structural and mechanistic principles of these molecular machines.** *Critical reviews in biochemistry and molecular biology*
  Khan, Y. A., White, K. I., Brunger, A. T.
  2021: 1-32

- **Evidence for a novel overlapping coding sequence in POLG initiated at a CUG start codon.** *BMC genetics*
  Khan, Y. A., Jungreis, I. n., Wright, J. C., Mudge, J. M., Choudhary, J. S., Firth, A. E., Kellis, M. n.
  2020; 21 (1): 25

- **ROS regulate differentiation of visceralizingLeishmaniaspecies into the virulent amastigote form.** *Parasitology open*
  Khan, Y. A., Andrews, N. W., Mittra, B.
  2018; 4