

PhD student position

The Fischer lab at St. Jude Children's Research Hospital is recruiting a graduate student for a structural biology project that exploits protein dynamics for ligand discovery against pediatric cancer targets.

Our lab specializes in crystallography at physiological temperatures to reveal hidden insights into the protein conformational landscape that is relevant for function and ligand discovery.

You will be part of an interdisciplinary team that uses structural biology, biochemistry, biophysics and computation to characterize dynamic, disease-relevant states of proteins, ligands and water networks. By finding ligands against those flexible protein states, and revealing allosteric networks we can explore new ways to modulate protein malfunction in disease.

This work will provide a solid training in current opportunities within structure-based ligand discovery with relevance for both academia and industry. The project is housed in the [Department of Chemical Biology and Therapeutics](#), and [Structural Biology](#) at St. Jude Children's Research Hospital. It builds on strong investments into a world-class infrastructure in structural and chemical biology. With its excellent core facilities, highly interactive and supportive environment, St. Jude Children's Research Hospital is a great place to do research and build a career whilst living in an affordable city.

Accompanying courses will be taken in conjunction with the Department of Pharmaceutical Sciences at the University of Tennessee Health Science Center.

Admission requirements:

- a BS or MS degree in physics, chemistry, biology, mathematics, engineering, or other appropriate disciplines.
- a minimum Grade Point Average of 3.0
- a combined Graduate Record Examination score (verbal and quantitative) of at least 300
- proof of proficiency in English (e.g. TOEFL)

Optional qualifications:

- Hands-on molecular biology and crystallography experience

Please direct your questions and application package including a current CV and cover letter that describes your interest and relevant qualifications to: Dr. Marcus Fischer (marcus.fischer@stjude.org) by February 21st 2022.

Online application deadline is March 15th for admission to the Fall Semester starting in August 2022.

Relevant papers include:

- Bradford et al. (2021). Temperature artifacts in protein structures bias ligand-binding predictions. *Chemical Science*. DOI: 10.1039/D1SC02751D
- Fischer (2021). Macromolecular room temperature crystallography. *Q Rev Biophys* 54. E1
- Darby et al. (2019). Water Networks Can Determine the Affinity of Ligand Binding to Proteins. *JACS* 141, 15818-26.
- Balias et al. (2017). Testing inhomogeneous solvation theory in structure-based ligand discovery. *PNAS* E6839-46.
- Fischer et al. (2015). One crystal, two temperatures: cryocooling penalties alter ligand binding to transient protein sites. *Chembiochem* 1560-64.
- Fischer et al. (2014). Incorporation of protein flexibility & conformational energy penalties in docking screens to improve ligand discovery. *Nature Chemistry* 6, 575-83.

More info at: <https://www.stjude.org/fischer>