

Postdoctoral Research Associate – Structural Biology & Cryo-EM

Antony Laboratory of Structural Enzymology, Department of Biochemistry & Molecular Biology, Saint Louis University School of Medicine

The Antony Laboratory is seeking multiple highly motivated Postdoctoral Research Associates to join a dynamic, interdisciplinary team investigating the molecular and structural mechanisms of enzymes involved in DNA repair, recombination, mRNA processing, and long-range electron transfer. Our lab applies advanced structural and biophysical methodologies including cryo-electron microscopy (cryo-EM), X-ray crystallography, single-molecule fluorescence, and enzyme kinetics to elucidate how large macromolecular assemblies carry out essential biological processes. These positions are supported by NIH (NIGMS/NCI) and DOE funding and offer the opportunity to work on high-impact structural biology problems with broad relevance to genome maintenance and energy transduction.



Research Areas

Postdoctoral researchers will lead structural and mechanistic studies on one or more of the following systems:

- Protein complexes involved in DNA repair and recombination, including mediators of homologous recombination and replication-associated DNA processing (NIH-funded).
- Nitrogenase and nitrogenase-like oxidoreductases, focusing on structure–function relationships and conformational dynamics involved in electron transfer (DOE-funded).
- Ribosomal and RNA-protein complexes relevant to translational regulation and RNA recognition.

Primary Job Responsibilities

- Determine high-resolution structures of large enzyme complexes using cryo-EM (single-particle reconstruction and/or cryo-EM sample preparation and data collection).
- Perform protein purification, biochemical characterization, and reconstitution of large multi-subunit assemblies.
- Integrate structural data with biophysical, single-molecule, and kinetic approaches to define mechanistic models of enzyme function.
- Design and execute independent research projects within the broader goals of the lab.
- Prepare manuscripts for publication and present research at national and international meetings.

- Mentor graduate and undergraduate trainees and contribute to a collaborative lab environment.

Required Qualifications

- A Ph.D. in Biochemistry, Structural Biology, Biophysics, Molecular Biology, or a related field.
- A strong publication record demonstrating expertise in structural biology.
- Hands-on experience in cryo-EM, X-ray crystallography, or advanced structural methods.
- Demonstrated ability to work effectively with large enzyme complexes or multi-protein assemblies (highly desirable).
- Strong communication, organizational, and problem-solving skills.

Preferred Expertise

Candidates with one or more of the following will be given priority:

- Cryo-EM grid optimization, data collection (Krios/Glacios), and reconstruction workflows
- Structural analysis of dynamic/heterogeneous complexes
- Electron transfer enzymes or redox-active metalloproteins
- DNA-protein interaction studies, including DNA repair complexes
- Single-molecule biophysics (smFRET or optical tweezers)
- Experience with Fe-S proteins or nitrogenase-related systems

About the Antony Lab

Our lab explores how enzymes function at the molecular level by integrating structural biology (cryo-EM and X-ray), biophysics, and mechanistic enzymology. We dissect how enzymes recognize substrates, coordinate within large assemblies, and achieve high fidelity during DNA repair, recombination, and electron transfer. We are located within the Edward A. Doisy Department of Biochemistry & Molecular Biology at Saint Louis University, a collaborative research environment with cutting-edge instrumentation and strong institutional support.

The Antony Lab is deeply committed to supporting the career development of postdoctoral scholars and preparing them for successful independent research careers. Postdocs are provided with protected time specifically dedicated to crafting competitive K99/R00 Pathway to Independence proposals, along with structured mentoring to refine research aims, identify training needs, and build a compelling scientific narrative. In addition to leading high-impact projects within the lab's funded research programs, trainees are encouraged to develop independent project directions that can form the foundation of their future laboratories. Our mentoring philosophy emphasizes scientific independence, strategic career planning, grant-writing skills, and visibility within the research community, ensuring each postdoctoral researcher is well-positioned for a smooth transition to the next stage of their career.

How to Apply

Interested candidates should submit the following as a single PDF:

- Cover letter describing research experience, interests, and career goals
- Curriculum vitae
- Contact information for **three references**

Send applications to: edwin.antony@health.slu.edu

Applications will be reviewed on a rolling basis until all positions are filled.