



# Open Postdoctoral Positions

Labs listed below are currently seeking new postdoctoral fellows. Additional details in the following pages.

Department	Faculty Member	Research Topic
Chemical Biology & Therapeutics	Anang Shelat	Multi-Scale Modeling of Biological and Chemical Data
	Taosheng Chen	Small-Molecule Transcription Factor Drug Discovery
	Marcus Fischer	Structure-Based Ligand Discovery
Computational Biology	Jiyang Yu	Systems Biology, Functional Genomics, Immuno-Oncology
Developmental Neurobiology	Stanislav Zakharenko	Synaptic and Neuronal Mechanisms of Schizophrenia
	Lindsay Schwarz	Mechanisms of Neuromodulatory Circuit Organization
Diagnostic Imaging	Claudia Hillenbrand	MR Physics: Methods and Device Development
Epidemiology & Cancer Control	Kirsten Ness	Functional Limitations Among Cancer Survivors
Immunology	Douglas Green	Apoptosis, Autophagy and Mitochondria
Infectious Diseases	Jason Rosch	Bacterial Genomics and Metal Transport
Pharmaceutical Sciences	Mary Relling	Pharmacogenomics and Leukemia Therapy
Radiation Oncology	Chia-Ho Hua	Image-Guided Radiotherapy, Normal Tissue Toxicity
Structural Biology	Eric Enemark	Molecular Mechanisms of DNA Replication
	Tanja Mittag	Dynamic Protein Complexes in Signal Transduction
	Junmin Peng	Systems Biology, Proteomics, and Ubiquitin Biology

**About St. Jude Children's Research Hospital:** A private research institution in Memphis, Tennessee, where cutting-edge basic research is translated into novel therapies. We have been named on *Fortune* magazine's 'Best Companies to Work For' list for seven consecutive years. 120 basic science faculty and 250 postdoctoral fellows collaborate with 90 clinical faculty, creating excellent translational research opportunities.

If you are interested in postdoc positions, please e-mail your CV to [postdoc@stjude.org](mailto:postdoc@stjude.org), and indicate faculty of particular interest. Academic Programs staff, listed below, facilitate the application and interview process, and provide information on research and relocation. Visit [www.stjude.org/postdoc](http://www.stjude.org/postdoc) for more information.

Linda Harris, PhD, Director of Postdoctoral Talent Acquisition

Brendan O'Hara, MSc, Senior Postdoctoral Recruiter

Deanna Tremblay, MSc, Postdoctoral Recruiter

## Chemical Biology & Therapeutics

Taosheng Chen, PhD	Small-molecule Transcription Factor Drug Discovery	Job # 35318
This lab studies signaling pathways in the development of cancer, and the response of cancer to chemotherapeutic agents, with an ultimate goal of developing novel therapies. The fellow will investigate the mechanism responsible for, and develop pharmacologic tools to prevent or overcome xenobiotic receptors (PXR and CAR)-mediated liver toxicity and cancer drug resistance. The fellow will employ cellular, molecular, biochemical, and chemical biology approaches, and work in a collaborative multidisciplinary team.		
Anang Shelat, PhD	Multi-Scale Modeling of Biological and Chemical Data	Job # 32715
The project is to discover small molecules that induce synthetic lethality in pediatric cancers. Identification of the mechanism of action of the compound, and molecular determinants which govern susceptibility and resistance, are key motivations. This work will directly support the institution's translational program, with the ultimate goal of identifying clinically-relevant chemotherapeutic strategies. The applicant will be expected to apply high-throughput screening technologies to identify novel small-molecules, including repurposed drugs and chemical probes, and uncharacterized compounds from diversity libraries.		
Marcus Fischer, PhD	Structure-Based Ligand Discovery	Job # 36601
This project examines protein conformational flexibility and hydration relevant for protein (mal-) function. We seek applicants with strong training in molecular biology and protein biochemistry, and a keen interest or ideally experience in structural biology and ligand discovery. You will be part of an interdisciplinary team that uses structural biology (RT crystallography) to characterize disease-relevant protein states, computational methods (docking, custom software, MD) to analyze and exploit them, and experiments (biophysical, biochemical, cell-based assays) to test the impact of small molecules on biology and disease. These approaches have relevance for allosteric regulation of proteins and protein-protein interactions.		
Requirements: Ability to conduct independent research in molecular biology and protein biochemistry, including cloning and protein purification that enable structural studies. Ideally has a background in relevant areas including protein crystallography, biophysics, chemical biology, or computational biology; familiarity with multimode plate reader based assays (TR-FRET, FP, AlphaScreen, Kinetics) is a plus. Eager to learn and implement new techniques from relevant areas. Proficiency in Python or shell scripting will help scaling up data analysis.		
<h2>Computational Biology</h2>		
Jiyang Yu, PhD	Systems Biology, Functional Genomics, Immuno-Oncology	Job # 36072
Develop and apply computational and systems biology approaches to dissect molecular circuits that drive tumorigenesis, tumor immune-escape and drug resistance, and identify biomarkers and combination therapies (particularly with immunotherapy) for treatment of pediatric cancer. We seek a candidate with a strong background/interest in computational and systems biology to work closely with Dr. Yu and staff scientists in the discovery of novel network biomarkers and combination therapies for pediatric cancer by integration of high dimensional transcriptomic, genomic, epigenomic, functional genomic, chemical genomic and proteomic data generated from patients or cell models at bulk or single-cell level. Good communication and teamwork skills are essential.		
Requirements: A recent PhD, and expertise in 1) cancer biology, molecular biology, functional genomics technology (RNAi/CRISPR) or immunology with a strong interest in quantitative data analysis or 2) expertise in computational and systems biology or network biology with a strong interest in translational cancer research. Candidate is expected to be a quick learner for new analytical approaches, and capable to apply or develop novel computational methods for solving complex problems.		
<h2>Developmental Neurobiology</h2>		
Stanislav Zakharenko, MD, PhD	Synaptic and Neuronal Mechanisms of Schizophrenia	Job # 35779
The candidate will investigate molecular mechanisms of 22q11 deletion syndrome, a condition that predisposes to schizophrenia. The project will focus on molecular interactions of novel mitochondrial proteins. Multidisciplinary approach includes single-cell electrophysiology, two-photon imaging, two-photon glutamate uncaging, optogenetics, <i>in vivo</i> calcium imaging, and mouse behavior.		
Requirements: A recent PhD and experience in molecular techniques used to characterize proteins and study their interactions.		

To apply, email [postdoc@stjude.org](mailto:postdoc@stjude.org)

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## Developmental Neurobiology (cont.)

Lindsay Schwarz, PhD

Mechanisms of Neuromodulatory Circuit Organization

Job # 36528

This lab works to understand how neuromodulatory circuits in the brain contribute to diverse behaviors and neurological disorders. Current projects focus on identifying the role of heterogeneously expressed molecules within the Locus Coeruleus (LC), as well as how activation of the LC differentially modulates the brain depending on the situation. We are also interested in understanding how changes in brain neuromodulation contribute to neurological disorders such as depression and anxiety. We utilize multidisciplinary approaches, including next-generation sequencing, *in vivo* calcium imaging, viral genetic tools, optogenetics, and mouse behavior.

Requirements: Ph.D. or equivalent in neuroscience, genetics, biology, or related field. Experienced with techniques listed above is desirable. The candidate will develop their own research project, interact collaboratively with other members of the lab, and have excellent oral and written communication skills. Please submit a brief statement regarding previous work and future goals.

## Diagnostic Imaging

Claudia Hillenbrand, PhD

MR Physics: Methods and Device Development

Job # 36270

The candidate will focus on the development of efficient techniques for quantitative medical image analysis and processing of advanced body imaging scans, or the optimization of MRI sequences to facilitate data evaluation. Data is acquired as part of ongoing clinical and research trials. Specific applications could include automated tissue segmentation, volumetric whole body fat muscle evaluation, whole body screening for malignant nodes, and longitudinal, multi-modality tumor characterization.

Requirements: Ph.D. in physics, computer sciences, biomedical engineering, electrical engineering, or other appropriate scientific field. Experience in MRI research or exposure to other imaging modalities is required. Programming skills in C++ and/or Matlab. Preferred skills include experience in signal and image processing, machine learning, multi-dimensional data and effective visualization. Experience with quantitative body imaging, tissue segmentation, and parameter estimation is desirable. Additional experience in MRI acquisition and pulse sequence programming, ideally in the Siemens IDEA & ICE environment is a plus.

## Epidemiology & Cancer Control

Kirsten Ness, PhD

Functional Limitations Among Cancer Survivors

Job # 35226

This position offers individualized training in epidemiology and clinical outcomes research with the goal of preparing the Fellow for an independent investigator position. Particular emphasis is placed on training in the design, analysis, and interpretation of epidemiologic studies, and on the development and implementation of interventional research designed to improve physical health, performance, and participation. Available study populations include pediatric cancer patients and adult survivors of pediatric cancer. Topical areas of ongoing research include accelerated aging, frail health, cardiopulmonary and musculoskeletal fitness and implementation of interventions to improve health optimizing behaviors in both children and adults. This position requires active collaboration with a multidisciplinary team of investigators. The fellow will be expected to generate publications, present research at national and international meetings, and propose independent research using available resources.

## Immunology

Douglas Green, PhD

Apoptosis, Autophagy and Mitochondria

Job # 36252

Several positions are available focusing on active cell death and cell survival, extending from the role of cell death in cancer regulation and immune responses in the whole organism to the fundamental molecular events directing death and survival of cells.

Requirements: A Ph.D. or equivalent in immunology, genetics, molecular biology, cell & developmental biology, or biochemistry. Preference will be given to individuals with an interest in cell death mechanisms, or metabolism of activated T lymphocytes.

## Infectious Diseases

Jason Rosch, PhD

Bacterial Genomics and Metal Transport

Job # 35678

Research is broadly focused on pneumococcal genetics and host-pathogen interactions.

Requirements: A recent Ph.D. in microbiology or a related field. The ideal candidate will be familiar with Gram-positive bacterial genetics and physiology. Experience and willingness to work in murine models of host-pathogen interactions is essential.

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## Pharmaceutical Sciences

Mary Relling, PharmD

Pharmacogenomics and Leukemia Therapy

Job # 36378

The long term goal is to devise treatment regimens for acute lymphoblastic leukemia (ALL) with improved efficacy and less toxicity. Discovery work focuses on elucidation of the genetic and treatment-related determinants of ALL outcome phenotypes (relapse and adverse effects such as asparaginase-induced pancreatitis, allergy, and hepatic toxicity, and glucocorticoid-induced osteonecrosis). Genome-wide approaches are used in the clinic, and candidate genes are further explored in mechanistic follow-up studies in preclinical or clinical models. Primary preclinical models include murine models of ALL efficacy and of drug-induced adverse effects, superimposed on murine host genetic backgrounds that mimic host genetic variability observed in patients with ALL. Clinical and translational studies involve substantial collaboration with statisticians and clinicians. In addition, there are opportunities to engage in our programs for clinical implementation of pharmacogenetics, both locally at St. Jude ([www.stjude.org/pg4kds](http://www.stjude.org/pg4kds)) and as part of a leading international consortium ([www.cpicpgx.org](http://www.cpicpgx.org)) as part of the NIH Pharmacogenomics Research Network ([www.pgrn.org](http://www.pgrn.org)).

Requirements: A doctoral degree with laboratory expertise in a relevant area, although candidates with a strong statistical genetics and/or computational background will also be considered.

## Radiation Oncology

Chia-ho Hua, PhD

Image-guided Radiotherapy, Normal Tissue Toxicity

Job # 35972

Research topics include: conducting focused research in the following topics with spectral CT and MR simulators, including reducing proton range uncertainty with tissue properties estimated by spectral CT. Improving tumor delineation and characterization with spectral CT. Guiding treatment and adaptive planning decisions with MR imaging performed during the treatment course. Evaluating advanced 4D MR techniques.

Requirements: A PhD or DSc in Medical Physics, Biomedical Engineering, Radiological Sciences, or other relevant engineering and physical sciences. Strong knowledge and experience in medical image processing (including DICOM-RT knowledge), analytical and scientific programming skills (e.g. Matlab, IDL, Python, Java) and working knowledge of CT and MR physics (as evidenced by coursework and multiple peer-reviewed publications during graduate study)

## Structural Biology

Eric Enemark, PhD

Molecular Mechanisms of DNA Replication

Job # 35977

This lab studies the structure and function of helicase proteins and their mechanism of action on nucleic acids. This position is available for applicants with a strong interest structural biology. The department is highly interactive, and has state-of-the-art facilities for structural studies, including shared synchrotron time.

Requirements: A PhD in biochemistry or related field, and experience in either protein crystallography, or experience in biochemistry and a keen interest in protein crystallography and structural biology

Tanja Mittag, PhD

Dynamic Protein Complexes in Signal Transduction

Job # 36160

This lab studies liquid-liquid phase separation (LLPS) in the formation of membrane-less organelles. Interests include: 1) sequence features of disordered protein regions (IDRs) undergoing LLPS, 2) structure of IDRs in the dense liquid phase, 3) sequence-conformation relationships of IDRs, 4) enzymatic function in the dense liquid phase, 5) diseases associated with LLPS. We use high-field NMR spectroscopy, scattering methods, AUC, fluorescence methods, light microscopy, biochemical assays, and cell biology, usually a subset of these methods for any given project. We collaborate with several other groups in the field. The fellow will develop their own research project, perform experiments with minimal supervision, and develop new procedures as needed.

Requirements: A PhD, with experience in NMR spectroscopy, single molecule Fluorescence approaches, or rigorous knowledge of other biophysical techniques preferred.

Junmin Peng, PhD

Proteomics, Ubiquitin Biology and Human Disease

Job # 36435

This lab uses systems biology and integrative multi-omics approaches (e.g. mass spectrometry-based proteomics and metabolomics) to explore molecular mechanisms of common human disorders (e.g. cancer and Alzheimer's disease). Network analysis and integration of such large-scale omics data offer a systems or holistic view, for unbiased identification of central disease gene/protein networks, functional modules and master regulators. Beyond big data analysis, molecular targets of interest will be followed in subsequent hypothesis-driven studies in cellular and animal models. We will also investigate network simulation and small molecule drugs that modulate the activities of these targets. The overarching aim is to develop systems biology tools and provide novel insights into the pathogenesis and therapeutic intervention, as well as disease biomarker discovery.

Requirements: A Ph.D. degree in biochemistry, cell biology, genetics, neuroscience, systems biology or a related field or a M.D. degree. Prior expertise in omics technologies and systems biology is not required.

To apply, email [postdoc@stjude.org](mailto:postdoc@stjude.org)

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