Open Postdoctoral Positions

Department	Faculty Member	Research Topic
Biostatistics	Motomi Mori	Basic, translational, clinical and population science
Bone Marrow Transplant & Cellular Therapy	Christopher DeRenzo	Immunotherapy for pediatric patients with solid tumors
	Stephen Gottschalk	Cancer immunotherapy, cell therapy, stem cell transplantation
Cell & Molecular Biology	Andrew Kodani	Cellular and molecular mechanisms underlying neurodevelopmental disorders
Chemical Biology & Therapeutics	Aseem Ansari	Synthetic genome regulators
	Taosheng Chen	Small-molecule transcription factor drug discovery
	Anang Shelat	Multi-scale modeling of biological and chemical data
Computational Biology	Brian Abraham	Transcriptional control of cell identity and disease
	Xiang Chen	OMICS integration and tumor heterogeneity by machine learning approaches
	Paul Geeleher	Computational methods and drug repositioning
	Jiyang Yu	Systems biology, functional genomics and immuno-oncology
	Jinghui Zhang	Genomic sequence analysis and visualization
Developmental Neurobiology	Fabio Demontis	Mechanisms of skeletal muscle aging, protein homeostasis, and myokines
	Michael Dyer	Retinal development, retinoblastoma, & pediatric solid tumors
	Khaled Khairy	Computational models of membrane-bound structures
	Myriam Labelle	Role of platelets in cancer metastasis
	Paul Northcott	Integrative genomics and molecular features of pediatric brain tumors
	Jamy Peng	Epigenetic regulation of stem cell functions
	Lindsay Schwarz	Molecular and organizational diversity of neuromodulatory circuits
	David Solecki	Cell polarity in neuron precursor differentiation
Diagnostic Imaging	Puneet Bagga	Molecular MRI and MR spectroscopic techniques
Epidemiology & Cancer Control	Kevin Krull	Neurocognitive outcomes of pediatric cancers
Hematology	Wilson Clements	Vascular/hematopoietic development and leukemia
	Shannon McKinney-Freeman	Mechanisms of hematopoietic stem cell development and transplantation
Immunology	Hongbo Chi	Cellular signaling in innate and adaptive immunity
	Thirumala-Devi Kanneganti	Mechanisms of host defense and inflammation
Oncology	Adam Durbin	Epigenetic determinants of gene regulation
	Mark Hatley	Cellular and molecular origins of rhabodmyosarcoma
	Kim Nichols	Heritable cancers and primary immunodeficiency syndromes
	Charles Roberts	SWI/SNF (BAF) chromatin remodeling/tumor suppressor
Pharmaceutical Sciences	David Rogers	Molecular and genetic basis of antifungal drug resistance
	Daniel Savic	Pharmacogenomics and cis-regulatory architecture of pediatric leukemia
Structural Biology	Scott Blanchard	Examining structure-function relationships in macromolecular assemblies
	Chia-Hsueh Lee	Molecular mechanisms of membrane signaling complexes
	Tanja Mittag	Dynamic protein complexes in signal transduction
	Tudor Moldoveanu	Programmed cell death in health and disease
	Ji Sun	Structural and pharmacological studies of membrane proteins
Surgery	Andrew Davidoff	Neuroblastoma, renal tumors, and germ cell tumors; angiogenesis inhibition

To apply, email your CV to postdoc@stjude.org

Biostatistics

Motomi Mori, PhD — **Basic, Translational, Clinical and Population Science**

St. Jude is seeking outstanding candidates for postdoctoral fellowships in biostatistics methods and applications involving pediatric cancer and catastrophic diseases. Positions are available in diverse biostatistics research areas, including designs of early phase clinical trials, epidemic modeling and microsimulation methods, machine learning, analysis of high-dimensional data, integrative omics analysis, survival analysis and longitudinal data. St. Jude leads two of the world's largest pediatric survivorship research studies, St. Jude LIFE and the Childhood Cancer Survivor Study (CCSS), and the largest pediatric cancer genome database, St. Jude Cloud.

Requirements: A Ph.D. in statistics, biostatistics, or closely related field is required. Applicants must have a strong computational background and demonstrate excellent written and verbal communication skills.

Bone Marrow Transplant & Cellular Therapy

Christopher DeRenzo, MD — **Immunotherapy for Pediatric Patients with Solid Tumors**

A position is available to study chimeric antigen receptor (CAR) T cells for the treatment of pediatric patients with solid tumors. The project will include pre-clinical development and testing of novel CAR T-cell therapies against pediatric solid tumors in vitro & in vivo.

Requirements: PhD in the area of immunology, cancer biology, cancer immunotherapy, or a related field.

Stephen Gottschalk, MD — **Cancer Immunotherapy, Cell Therapy, Stem Cell Transplantation**

In an effort to better model CAR T-cell therapy in preclinical modelling for solid tumors, we have recently established an immune competent sarcoma model. In the proposed project we now want to perform mechanistic studies and perform a 'candidate gene screen' as well as a CRISPR/Cas9 in vivo screen to discover genes that improve or impede T cell function. One major focus of this project is to better understand how transferred cells interact with the tumor microenvironment, and resident immune cells. The ultimate goal of our studies is to translate these approaches into early phase clinical testing.

Requirements: Ph.D. in molecular biology, cell biology, genetics, genomics, or immunology. A strong immunology and cell biology background, with an emphasis on cellular immunology, and genetic manipulation of murine cells is needed.

Cell & Molecular Biology

Andrew Kodani, PhD — **Cellular and Molecular Mechanisms Underlying Neurodevelopmental Disorders**

A position is available starting in early 2021 for individuals passionate about human disease genetics and brain development. The postdoc will utilize mouse models and cell biology to determine how human mutations in proteins disrupt neurodevelopment.

Requirements: PhD and experience genetics and neurodevelopment, as well as mouse husbandry and immunohistochemistry are required. Some experience in cell culture, high resolution microscopy and biochemistry is preferred.

Chemical Biology & Therapeutics

Aseem Ansari, PhD — **Synthetic Genome Regulators**

A joint postdoctoral fellowship is available in the labs of Aseem Ansari and Stanislav Zakharenko (Department of Developmental Neurobiology). This project aims to discover a new therapeutic strategy to treat schizophrenia and autism-associated 22q11 deletion syndrome by designing new artificial transcription factors. Artificial transcription factors are designer regulatory proteins comprised of modular units that can be customized to overcome challenges faced by the natural transcription machinery in establishing and maintaining normal transcription levels. The goal is to restore normal transcription levels of candidate genes mapped within the 22q11.2 microdeletion.

Requirements: PhD and experience in standard biochemical and biophysical methods required. Knowledge regarding chemical structures, techniques and design is required. Omics experience (RNAseq, ChIPseq, etc) and bioinformatic skills are preferred.

Taosheng Chen, PhD — **Small-Molecule Transcription Factor Drug Discovery**

This lab studies the role of PXR and CAR (ligand-regulated transcription factors) in regulating drug-induced liver toxicity and cancer drug resistance. The lab develops novel chemical probes/therapeutic leads and uses them to interrogate the function of PXR and CAR in order to overcome drug toxicity and drug resistance in cellular and animal models. Available projects: 1) Lead optimization of small molecule modulators of PXR and CAR (medicinal chemistry & structure-based approach). 2) In vitro and in vivo validation of novel small molecule modulators of PXR and CAR in regulating drug metabolism, toxicity and resistance (pharmacological approach). 3) Regulation of PXR and CAR signaling pathways (multidisciplinary approach).

Requirements: PhD or MD. Biologists, pharmacologists, medicinal chemists, or structural biologists are encouraged to apply. Experience in one of the following areas is required: cell and molecular biology, biochemistry, pharmacology, medicinal chemistry, or structural biology.

Anang Shelat, PhD — **Multi-Scale Modeling of Biological and Chemical Data**

A joint position is available in the labs of Dr. Anang Shelat and Dr. Phil Potter to assess the therapeutic potential of selective transcriptional perturbation in pediatric cancers using small molecules. The identification of the mechanism of action of these compounds, and the molecular determinants which govern susceptibility and resistance, are key motivations for this position. This work will directly support the institution's translational program, with the goal of identifying clinically relevant chemotherapeutic strategies for pediatric cancer.

Requirements: The applicant must have a strong background in genomics, epigenetics, biochemistry, and molecular biology. The applicant must be comfortable with developing, validating, and executing biochemical and cell-based assays to quantify transcription and transcriptional complexes. The applicant will be expected to apply high-throughput screening technologies to identify novel small-molecules or drug combination strategies. The applicant is expected to work alongside cancer biologists, computational biologists, pharmacologists, and clinicians in a project team environment, with the end goal of contributing to the discovery of small molecules with the potential to treat pediatric cancers.

Computational Biology

Brian Abraham, PhD — **Transcriptional Control of Cell Identity and Disease**

We are recruiting computationally or biologically talented individuals seeking to transition into computational/bioinformatics research. We build analytical software pipelines to find answers to biological questions about gene regulation in big datasets, usually from applied sequencing experiments like ChIP-Seq, RNA-Seq, and Hi-ChIP. Our interest centers on enhancers and super-enhancers, how these regulatory elements establish gene expression programs in healthy cells, and how enhancers are altered, abused, and targetable in diseased cells. Particular focus is on characterizing the core regulatory circuitry driving understudied human cancers, and on understanding how mutations in the non-coding DNA of tumor cells can drive their survival and proliferation through misregulation.

Requirements: A PhD and experience building analysis pipelines in Unix using common analysis toolkits (e.g. bedtools, samtools), fundamental understanding of gene expression mechanisms, and building succinct, clear figures using R.

Xiang Chen, PhD — **OMICS Integration and Tumor Heterogeneity by Machine Learning Approaches**

A position is available to develop and apply computational approaches to understand interactions between genetic alterations and epigenetic deregulations and to discover potential biomarkers for predicting drug responses in pediatric cancers. We are looking for a highly motivated candidate who has a strong background/interest in molecular biology and computational biology. The project end goal is contributing to the discovery of novel (epi-)drivers and treatment protocols for pediatric cancers using high dimensional genomic, epigenomic, transcriptomic and proteomic data generated from bulk or single-cell tumor specimens.

Requirements: A PhD and expertise in cancer biology or molecular biology with a strong interest in quantitative data analysis or expertise in computational biology with a strong interest in cancer research.

Paul Geeleher, PhD — **Computational Methods and Drug Repositioning**

The Geeleher lab has 2 open positions. 1) Developing machine learning approaches for integration of pre-clinical, clinical genomics and electronic health record data for drug re-purposing and pharmacogenomics of anticancer agents. The postdoc will explore, optimize and build on emerging informatics techniques, including integrating somatic variation with transcriptomic variation and with protein-protein interaction networks. 2) Developing statistical methods for integrating single cell and bulk tissue expression data to understand the relationship between common inherited genetic variation, gene expression, and drug response. The postdoc will explore how inherited genetic variation influences cancer risk, disease progression and drug response, building on methods developed in the lab to deconvolute eQTL signals from bulk tissue expression data to specific cell types.

Requirements: Applicants with a Ph.D. in a quantitative field are encouraged to apply. Strong candidates from a primarily wet-lab or clinical background who wish to develop sophisticated quantitative skills will also be considered.

Jiyang Yu, PhD — **Systems Biology, Functional Genomics and Immuno-Oncology**

The candidate will be jointly trained in the labs of Drs. Jiyang Yu in the Computational Biology department and Jun J. Yang in the Pharmaceutical Sciences and Oncology departments. The successful applicant will work in a dynamic and collaborative environment, performing integrative analysis of multidimensional datasets at the bulk and single-cell levels, including whole genome/exome sequencing, bulk and single-cell RNA-seq/ATAC-seq, proteomics, and ex vivo drug sensitivity profiling of preclinical and clinical leukemia samples. The algorithms and analysis aim to develop therapeutic strategies to improve leukemia treatment.

Requirements: Candidates must have (or soon receive) a PhD degree.

Jinghui Zhang, PhD — **Genomic Sequence Analysis and Visualization**

We are seeking candidates to lead discovery and/or method development of the following: non-coding driver variants that affect gene regulation in the context of predisposition, initiation, and progression of pediatric cancer; clonal evolution of relapsed cancer; and genomic cloud, clinical data integration and visualization. Candidates will have access to genomic and epigenetic data generated from pediatric cancer patients, 3D genome technology such as Hi-C/Capture C, a long-read sequencing platform, and state-of-art visualization tools.

Requirements: PhD and the ability to apply or develop novel computational methods for solving complex problems. Inter-disciplinary training will be provided to broaden or strengthen computational or biological expertise.

Developmental Neurobiology

Fabio Demontis, PhD — **Mechanisms of Skeletal Muscle Aging, Protein Homeostasis, and Myokines**

The Demontis lab uses *Drosophila* and mice to decipher the conserved mechanisms of skeletal muscle aging and proteostasis, and how muscle-derived signals (myokines) affect lifespan and the progression of age-related diseases in other tissues

Requirements: A PhD and expertise in molecular, biochemical and/or cell biological techniques. Training in aging research, proteostasis, and/or Drosophila genetics is preferred but not required.

Michael Dyer, PhD — **Retinal Development, Retinoblastoma, and Pediatric Solid Tumors**

We developed a detailed map of the structure and accessibility of the human and mouse retinal genome during development. Specifically, we performed a multifaceted integrated analysis that included profiling of the covalent modifications to the DNA and histones, promoter structure, chromatin accessibility, looping interactions, and euchromatin/heterochromatin localization. One of the most significant discoveries to come from this comprehensive analysis was the identification of a series of core regulatory circuit super-enhancers (CRC-SEs) adjacent to genes having important roles in retinal development. We are seeking a highly motivated postdoctoral fellow to study the role of CRC-SEs in retinal development and diseases such as macular degeneration and diabetic retinopathy.

Requirements: PhD and training in epigenetics, retinal biology and human stem cell research is preferred.

Developmental Neurobiology Continued

Khaled Khairy, PhD **Mechanics of the Nuclear Envelope via Computational Modeling**

We are seeking a highly motivated postdoc to study mechanics of the nuclear envelope via data-driven computational modeling. We combine continuum mechanics computational models of membrane-bound biological structures with state-of-the-art quantitative image analysis to gain insights into the basis for cell and organelle morphology, and to better understand mechanisms of shape change.

Requirements: Ph.D. in Biophysics, Physics, Mathematics, Computer Science or related field. The successful candidate should have experience with numerical methods, mathematical modeling, image processing and basic programming techniques.

Myriam Labelle, PhD **Role of Platelets in Metastasis**

The Labelle laboratory studies the role of the microenvironment in cancer progression and metastasis, with major efforts dedicated to elucidating the molecular mechanisms by which blood platelets, granulocytes, and the extracellular matrix (ECM) cooperate to promote metastasis. In recent work we discovered that WISP1, a factor secreted by tumor cells upon interactions with platelets, promotes metastasis by inducing collagen linearization in tumors. We are now interested in further understanding the molecular basis of platelet-tumor cell and WISP1-ECM interactions and how they can be targeted to prevent cancer metastasis and improve the survival of cancer patients. Current studies are conducted leveraging a wide array of model systems and techniques including novel mouse models of metastasis, patient-derived xenografts, in vitro co-culture systems, and advanced microscopy approaches.

Requirements: Candidates should have recently earned or expect to earn a Ph.D. and have a strong background in molecular and cell biology. Experience in cancer metastasis or platelet biology research is preferred but not required.

Paul Northcott, PhD **Integrative Genomics and Molecular Features of Pediatric Brain Tumors**

A position is available to join a highly interactive team studying the childhood brain tumor medulloblastoma. We are applying a combination of conventional and cutting-edge molecular approaches (i.e. WGS, WES, RNA-seq, single-cell RNA-seq, ATAC-seq, ChIP-seq, CUT&RUN, and proteomics) on large cohorts of clinically annotated patient germlines, tumors, and liquid biopsies. These highly integrative studies aim to gain improved understanding of molecular and clonal heterogeneity, driver gene alterations, oncogenic pathways and functional processes, and developmental origins of medulloblastoma subgroups and subtypes.

Requirements: The candidate shall have a strong background in cell and molecular biology, biochemistry, or related fields. Candidate must have a PhD, be highly motivated, have an excellent publication record, work well in a team environment, and possess strong communication and interpersonal skills. Individuals having experience with single-cell genomics, chromatin biology, and genome editing will be deemed highly competitive, as will those candidates with some degree of computational experience.

Jamy Peng, PhD **Epigenetic Regulation of Stem Cell Function**

A position is available to study epigenetic mechanisms that regulate stem cell functions. We utilize human neural stem cells to understand how chromatin structure and gene expression programming underlie human neural development. Regulators of modifications of H3K27 are our focus as they are amongst the most recurrently mutated modifiers in pediatric cancers. We generated preliminary findings to identify novel epigenetic mechanisms balancing the division and differentiation of human neural stem cells. These findings have strong implications for how dysfunction of H3K27 modifications lead to stem cell defects, contributing to neurodevelopmental defects and cancer.

Requirements: PhD with experience in mouse genetics and stem cell culturing.

Lindsay Schwarz, PhD **Molecular and Organizational Diversity of Neuromodulatory Circuits**

A joint postdoctoral fellowship position is available in the labs of Lindsay Schwarz and Suzanne Baker. There is evidence suggesting that norepinephrine signaling in the body can regulate tumor growth, and our goal is to determine if a similar phenomenon occurs in the brainstem. Using a mouse model developed by the Baker lab that replicates the biology of diffuse intrinsic pontine glioma (DIPG), the fellow will apply a neural-circuits based approach to target brainstem norepinephrine signaling and ask whether these manipulations influence DIPG growth and spread. Specifically, the fellow will target AAVs to brainstem NE neurons to 1) visualize their connectivity with developing DIPGs and 2) increase or decrease their activity and assess tumor growth. This position offers a unique intersection between neuroscience and cancer biology.

Requirements: Preference will be given to applicants who have received their PhD in the past 1-3 years and have experience in neurobiology or cancer biology-related research. It is expected that the candidate will independently advance the research project.

David Solecki, PhD **Cell polarity in Neuron Precursor Differentiation**

Neuronal polarity is an essential driving force that coordinates the choreography of neural development. How polarity signaling organizes the behavior of immature neurons, in addition to how polarity signaling cascades are regulated are the key topics studied by the Solecki laboratory. These questions are critical to understanding the pathology of neurodevelopmental diseases, where the production of neurons or their subsequent migration is defective. Exciting postdoctoral positions are available immediately in the Solecki lab for talented and highly motivated individuals interested in understanding the cell biology of neuronal polarity or the regulation of nuclear architecture during neuronal differentiation. The Solecki Lab takes a multidisciplinary approach via cutting edge imaging technologies like lattice light sheet (LLS) microscopy or correlative super-resolution electron microscopy (CLEM) and computational approaches to mechanistically analyze the molecular and cellular mechanisms controlling neuronal differentiation, migration, and polarization.

Requirements: Ph.D. and/or M.D. and with a strong background in cell biology, neuroscience, or biophysics. This position is an ideal opportunity for either (1) a cell biologist well versed in quantitative live-cell light microscopy whom would like to expand their research topic into neuronal cell biology or tissue morphogenesis, (2) a molecular biologist with experience in genomics approaches to understand epigenetic mechanisms of gene regulation with an interest to link that knowledge to the cell biology of nuclear organization using high-resolution microscopy, or (3) a biophysics oriented candidate that would like to apply traction force measurements and finite element analysis to understand how neurons alter adhesive affinities during key steps in their motility.

Diagnostic Imaging

Puneet Bagga, PhD **Molecular MRI and MR Spectroscopic Techniques**

The lab seeks postdoctoral candidates in molecular MRI and MR spectroscopy. The ideal candidate is interested in understanding the role of cellular metabolism in aging and cancer. The Department of Diagnostic Imaging provides a comprehensive array of qualitative and quantitative imaging assessment and techniques to St. Jude patients: MRI (3T Siemens and Phillips), fMRI, PET/CT, Image-guided Therapies and Procedures, Scintigraphy and SPECT/CT, DEXA and Quantitative CT for Bone Density, Post-processing Vision Laboratory.

Requirements: The ideal candidate should have a PhD. Expertise in either clinical/preclinical MR acquisition/data processing is a plus.

Epidemiology & Cancer Control

Kevin Krull, PhD **Neurocognitive Outcomes of Pediatric Cancers**

A postdoctoral position in pediatric cancer survivorship research is available in the Krull Lab. Positions are available in diverse research areas, including epidemiology, genetics, computational biology, psychology and neuropsychology, neuroscience, exercise physiology, oncology, pharmacology, radiology, surgery and biostatistics. St. Jude leads two of the world's largest pediatric survivorship research studies, St. Jude LIFE and the Childhood Cancer Survivor Study.

Requirements: PhD, MD, DO, or PharmD in a relevant field. Multiple positions are available, funded through a T32 training grant from the National Cancer Institute or our institutional budget. Applicants to positions funded by the T32 training grant must be citizens or noncitizen nationals of the United States or have been lawfully admitted for permanent residence at the time of appointment.

Hematology

Wilson Clements, PhD **Vascular/Hematopoietic Development and Leukemia**

A position is available in the Clements lab to study how the adult hematopoietic system is established during vertebrate embryonic development. We are interested in understanding how early precursors of the sympathetic nervous system and vascular smooth muscle precursors interact with developing endothelial cells to establish the earliest hematopoietic stem cells. Our recent findings and unpublished data define the existence of this connection in vertebrates and we are working to better understand key details.

Requirements: Ph.D., Experience in developmental hematopoiesis, as well as molecular, biochemical, and cell biological techniques.

Shannon McKinney-Freeman, PhD **Mechanisms of Hematopoietic Stem Cell Development and Transplantation**

A position is available to study the fundamental biology of hematopoietic stem cells. HSCs represent the most therapeutically exploited adult stem cell compartment, used routinely to treat leukemia and hematologic disease via HSC transplantation. Our major goals are to 1) illuminate the intrinsic and extrinsic factors that control the ability of HSC to home to, engraft, and repopulate the hematopoietic compartment after transplantation, 2) better understand the specification of HSCs and the hematopoietic hierarchy during ontogeny and 3) uncover how chronic hematologic disease corrupts HSCs. We hope to leverage this knowledge to design therapies targeted at improving HSC transplantation for hematologic disease and gene therapy, as well as illuminate mechanisms of hematopoietic failure during chronic hematologic disease.

Requirements: PhD and/or MD, and seeking to develop expertise in stem cell biology.

Immunology

Hongbo Chi, PhD **Cellular Signaling in Innate and Adaptive Immunity**

Postdoctoral positions are available to investigate cell metabolism of the immune system (immunometabolism) and its implications in cancer and other diseases. We are particularly interested in understanding the metabolic programs, signaling pathways, and systems-level regulatory networks in basic T cell and dendritic cell biology, tumor immunity and therapy, and autoimmune disorders. We apply interdisciplinary strategies by integrating immunological and genetic approaches with cutting-edge systems immunology tools including single-cell transcriptomics, proteomics, metabolomics, network reconstruction, and CRISPR screening.

Requirements: Ph.D. in immunology or cell biology and publication records are encouraged to apply.

Thirumala-Devi Kanneganti, PhD **Mechanisms of Host Defense and Inflammation**

A position is available investigating cellular signaling in the immune system. We are interested in signaling pathways in innate immunity and cell death (NLRs, inflammasomes). The lab offers a remarkable training environment in innate immunity with a PI who recently received the NCI Outstanding Investigator Award.

Requirements: PhD, DVM, MD/PhD in biomedical sciences with practical experience in immunology.

Oncology

Adam Durbin, MD, PhD **Epigenetic Determinants of Gene Regulation**

The Durbin lab is interested in a broad, "multi-omics" approach to understanding the epigenetically-coded processes that drive pediatric cancer. The primary research focus of the lab involves studying epigenetic determinants of gene regulation and transcriptional regulatory complexes in pediatric solid tumors to identify synergistic ways to target cancer cell growth. The lab uses combinations of functional genomics, chemical biology, and epigenomics to identify and characterize these dominant transcriptional regulatory complexes, their co-activators and co-repressors to define mechanistically-based strategies for pediatric solid tumor therapy. The long-term goal is to deeply understand fundamental aspects of the epigenetic control of transcription in tumor cell biology and advance therapeutic development.

Requirements: PhD and expertise in tissue culture, western blotting/co-immunoprecipitation, molecular cloning, functional genomics techniques including CRISPR-cas9 gene editing, and shRNA and siRNA gene disruption. Prior experience with cancer biology, mouse or zebrafish xenografts, liquid handling robotics, high-throughput screening, confocal microscopy and computational biology is appreciated but not required. Experience with R is required.

Oncology Continued

Mark Hatley, MD, PhD **Cellular and Molecular Origins of Rhabdomyosarcoma**

Positions are available to study how normal developmental processes are perturbed to drive pediatric embryonal tumors using rhabdomyosarcoma as a model system. Our recent findings defined the cell of origin of rhabdomyosarcoma, a presumed skeletal muscle tumor, as an endothelial progenitor cell. We now seek to elucidate the mechanism of this cell reprogramming event and its role in cell transformation. The lab leverages genetically engineered mouse models, patient-derived xenografts, human and mouse tumor and primary cell lines as well as IPS cells as model systems to interrogate the pathobiology of pediatric rhabdomyosarcoma.

Requirements: PhD with experience in mouse models, cell biology, and molecular biology preferred.

Kim Nichols, MD **Heritable Cancers and Primary Immunodeficiency Syndromes**

The laboratory of Kim Nichols is interested in identifying novel genes and genetic variants that contribute to development of cancer and primary immunodeficiency. We previously identified germline variants in ETV6, the gene encoding the essential hematopoietic transcription factor ETV6, in families affected by autosomal dominant thrombocytopenia and predisposition to B-acute lymphoblastic leukemia (B-ALL). We are now using human and mouse models to decipher how these germline ETV6 variants impact hematopoiesis and promote leukemogenesis. Ultimately, our goal is to better understand how germline and somatic genetic events perturb key cellular and molecular pathways that then lead to leukemia.

Requirements: Candidates with experience working with mouse models (breeding, harvesting organs, completing flow cytometry, and carrying out retroviral or lentiviral transduction of bone marrow cells followed by adoptive transfer) are encouraged to apply. A background in hematopoiesis or leukemia modeling is desired, but not necessary. We are also interested in candidates who have interest and experience in handling and differentiating iPSC or a background in functional genomics.

Charles Roberts, MD, PhD **SWI/SNF (BAF) Chromatin Remodeling/Tumor Suppressor**

A postdoctoral fellowship is available to study the epigenetic regulation of gene expression. In particular we are studying chromatin-modifying proteins with a major focus on the SWI/SNF (BAF) chromatin remodeling/tumor suppressor complex and its relationship to cancers. Research in the Roberts laboratory is designed to discover the mechanism by which SWI/SNF complex contributes to the regulation of gene expression and lineage specification, and the mechanisms by which mutation of the tumor suppressor subunits drive cancer formation. Currently there are several projects ongoing in the laboratory involving the use of a variety of model systems that have been engineered in the lab including mouse models, primary cells, and cell lines as well as the use of large sequencing, CRISPR, and drug vulnerability data sets.

Requirements: Candidates should have recently earned/expect to earn a Ph.D. and have published in peer-reviewed journals. We seek candidates with a strong background in molecular biology, cell biology, cancer biology, and/or genetics/epigenetics of tumorigenesis. A prerequisite is experience in basic methods of molecular biology and biochemistry.

Pharmaceutical Sciences

David Rogers, PharmD, PhD **Molecular and Genetic Basis of Antifungal Drug Resistance**

The overarching goal of the Rogers lab is to utilize genome-wide and molecular biological approaches to understand the molecular and genetic basis of antifungal drug resistance in pathogenic opportunistic fungi. The long-term goal of this project is to advance the treatment of invasive candidiasis by identifying the molecular mechanisms underpinning antifungal resistance in the emerging fungal pathogen *Candida auris*, and to ultimately use this understanding to design therapeutic strategies to overcome them. Our immediate objective is to fully understand the genetic and molecular basis of antifungal resistance in clinical isolates of *C. auris*.

Requirements: The successful candidate should have a Ph.D. degree in microbiology, molecular biology, or a related field. Candidate should also have strong skills in molecular biology and genomics (experience in the genetic manipulation of yeast and a proficient understanding of next generation sequencing, analysis, and bioinformatics), project management and scientific writing experience.

Daniel Savic, PhD **Pharmacogenomics and Cis-Regulatory Architecture of Pediatric Leukemia**

A postdoctoral position is available in the lab of Daniel Savic to study the gene regulatory architecture of pediatric leukemia in order to define how the noncoding portion of the human genome impacts chemotherapeutic drug response, and resistance and leukemia relapse. The goal is to gain better understanding of the genetic underpinnings of chemotherapeutic drug resistance/relapse in pediatric leukemia.

Requirements: The candidate should have prior training in gene regulation and experience performing and/or optimizing functional genomic assays (e.g. ChIP-seq, ATAC-seq, Hi-C, etc.), as well as an excellent understanding of next-generation sequencing technology. Experience with a programming language and a strong background in statistical genetics is highly desirable.

Structural Biology

Scott Blanchard, PhD **Examining Structure-Function Relationships in Macromolecular Assemblies**

The Blanchard lab is seeking a postdoctoral fellow to drive interdisciplinary research initiatives in synthetic biology applied to the mechanism of protein synthesis. The lab utilizes a range of quantitative biophysical and photophysical methods, as well as structural techniques, to explore clinically important biological systems, such as ribosome-catalyzed protein synthesis, membrane protein transport/signaling, and host-virus interactions, at the single-molecule scale.

Requirements: Ph.D. in chemistry or other physical science. Experience with quantitative biophysical techniques, such as fluorescence imaging/spectroscopy, force spectroscopy, or single-channel electrophysiological recordings preferred. This role involves protein and/or nucleic acid biochemistry, including protein expression, purification, and labeling and/or nucleic acid manipulation and purification.

Structural Biology Continued

Chia-Hsueh Lee, PhD **Molecular Mechanisms of Membrane Signaling Complexes**

Successful candidates will lead research projects focusing on structural mechanisms of neuronal membrane proteins. We use cryo-EM and biochemical/biophysical approaches to study the function of membrane proteins. The lab has frequent access to the state-of-the-art cryoEM facility at St. Jude, which houses a 300kV Titan Krios and a 200 kV Talos Arctica electron microscope, both equipped with a K3 detector and energy filter.

Requirements: PhD degree in biochemistry, structural biology, biophysics or related field. Project management and scientific writing experience. Expertise in structural biology (single particle cryo-EM or X-ray crystallography) would be a plus but is not required.

Tanja Mittag, PhD **Dynamic Protein Complexes in Signal Transduction**

The lab of Tanja Mittag seeks a postdoctoral fellow to work on an interdisciplinary project that will involve in vitro biophysics studies of phase separation and cell biological approaches to assess function. The latter component is in collaboration with Linda Hendershot's laboratory in the Department of Tumor Cell Biology. The project seeks to delineate the molecular mechanisms by which cancer mutations in the tumor suppressor SPOP, a ubiquitin ligase subunit, result in dysregulation of substrates. An important goal is to assess the role of phase separation for SPOP function.

Requirements: Given that the project will involve interdisciplinary research at the interface of biophysics and cell biology, the successful candidate should have a Ph.D. in in vitro structural biology/biophysics or cell biology. The candidate should demonstrate an academic record of excellence, and a strong interest in the growing field of biomolecular condensates.

Tudor Moldoveanu, PhD **Programmed Cell Death in Health and Disease**

A position is available in the Moldoveanu laboratory to work on an interdisciplinary project that will involve structural biology, protein engineering, biochemistry, and chemical biology. The successful candidate is expected to take a leadership role in ongoing research projects including mechanistic, structure-function studies in programmed cell death. The candidate will receive training in contemporary structural biology and mentoring for developing research proposals. The candidate will join a highly collaborative laboratory focused on elucidating cell death mechanisms, with access to state-of-the-art instrumentation and expertise in cryo-EM, NMR spectroscopy, X-ray crystallography, single molecule techniques, and protein technology.

Requirements: Ph.D. in structural biology, biochemistry, or related fields. The candidate should demonstrate an academic record of excellence, independent research, and a strong interest in mechanisms of cell death. Candidates with a background in membrane proteins and protein engineering are encouraged to apply.

Ji Sun, PhD **Structural and Pharmacological Studies of Membrane Proteins**

We use cryo-EM, biophysical, electrophysiological and biochemical approaches to study the function of membrane proteins. The postdoc will lead research projects focusing on structural mechanisms of membrane proteins. The lab has access to the state-of-the-art cryo-EM facility, which houses a 300kV Titan Krios and a 200 kV Talos Arctica electron microscope, both equipped with K3 detectors.

Requirements: PhD degree in biochemistry, structural biology, biophysics or related fields, as well as project management and scientific writing experience. Expertise in cell imaging and structural biology (single particle cryo-EM or X-ray crystallography) would be a plus.

Surgery

Andrew Davidoff, MD **Neuroblastoma, Renal Tumors, and Germ Cell Tumors; Angiogenesis Inhibition**

A postdoctoral fellowship is available in the lab of Dr. Davidoff to explore novel gene therapy techniques in the treatment of solid tumors. The Davidoff lab seeks an inventive researcher to develop novel gene therapy vectors and test them in our translational models of neuroblastoma, glioblastoma, and liver cancers. The ideal candidate will have experience with models of solid tumors and/or AAV-based gene therapy vectors, to seek innovative cures for rare pediatric cancers.

Requirements: Highly qualified, self-motivated candidates who have or expect to complete a PhD degree should apply. A track record for scholarly accomplishments is required. The candidate will be expected to develop, execute, and lead a cutting-edge project.