Open Postdoctoral Positions

Department	Faculty Member	Research Topic
Biostatistics	Motomi Mori	Basic, translational, clinical and population science
Cell & Molecular Biology	Heather Mefford	Genomic and epigenomic causes of pediatric epilepsy and related disorders
Chemical Biology & Therapeutics	Taosheng Chen	Small-molecule transcription factor drug discovery
	Tommaso Cupido	Chemical biology of protein machines
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	Paul Northcott	Integrative genomics and molecular features of pediatric brain tumors
	Jamy Peng	Epigenetic regulation of stem cell functions
	David Solecki	Cell polarity in neuron precursor differentiation
Epidemiology & Cancer Control	Kevin Krull	Neurocognitive outcomes of pediatric cancer
Hematology	Yong Cheng	Genomic approaches to studying cis-regulatory modules in hematopoiesis
	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
Infectious Diseases	Jason Rosch	Bacterial genomics and metal transport
Oncology	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
Pathology	Jeffery Klco	Genomic and functional characterization of acute myeloid leukemia
Pharmaceutical Sciences	David Rogers	Molecular and genetic basis of antifungal drug resistance
	Daniel Savic	Pharmacogenomics and cis-regulatory architecture of pediatric leukemia
	John Schuetz	ABC transporters and mitochondrial biology
	Jun Yang	Pharmacogenomics of anticancer agents and drug resistance
Structural Biology	Scott Blanchard	Examining structure-function relationships in macromolecular assemblies
	Tanja Mittag	Dynamic protein complexes in signal transduction
	Tudor Moldoveanu	Programmed cell death in health and disease
	Junmin Peng	Proteomics to ubiquitin biology and human disease
	Ji Sun	Structural and pharmacological studies of membrane proteins
Tumor Cell Biology	Martine Roussel	Pediatric brain tumors: molecular pathways, mouse models, and pre-clinical trials

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.

Cell & Molecular Biology

Heather Mefford, MD, PhD — **Genomic and Epigenomic Causes of Pediatric Epilepsy and Related Disorders**

The Mefford lab is seeking a postdoctoral fellow in translational neuroscience to study genomic and epigenomic causes of pediatric epilepsy and related disorders. Projects include integrated analysis of genome and transcriptome data to identify novel causes of pediatric epilepsy; investigating epigenetic causes of epilepsy; and functional studies of genetic epilepsies using patient-derived stem cell models.

Requirements: Experience in genomic technologies and analysis approaches; programming experience is desirable. Candidates interested in pursuing functional studies should have a strong background in genetics, molecular biology and/or developmental biology.

Chemical Biology & Therapeutics

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.

Tommaso Cupido, PhD — **Chemical Biology of Protein Machines**

The Cupido lab is seeking a highly motivated postdoctoral researcher to develop and apply cutting edge chemical biology and structural approaches for the study of gene expression regulation by protein machines, at the molecular level. A major focus of the lab is nucleic acid-interacting enzymes, whose function is dysregulated in cancer. To understand the mechanism and regulation of these enzymes in the context of cancer biology, we combine chemical probe design with a range of biochemistry, cell biology, and proteomics approaches. The successful applicant would be expected to take full advantage of outstanding scientific technology platforms at St Jude, including drug discovery, genomics, proteomics, microscopy, Cryo-EM, and biomolecular NMR facilities.

Requirements: The applicant should have a documented background in chemical or structural biology.

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 mis-regulation.

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. 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.

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.

Computational Biology Continued

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

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. 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.

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

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 such as lattice light sheet (LLS) microscopy or correlative super-resolution electron microscopy (CLEM), and computational approaches to 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.

Epidemiology & Cancer Control

Kevin Krull, PhD — **Neurocognitive Outcomes of Pediatric Cancer**

The department of Epidemiology & Cancer Control is seeking outstanding candidates for postdoctoral fellowship positions in pediatric cancer survivorship research. As a fellow, you will benefit from access to unique datasets and expertise. 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 (CCSS).

Requirements: Successful applicants will have a PhD, MD, DO, or PharmD in a relevant field. Positions are 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

Yong Cheng, PhD — **Genomic Approaches to Studying Cis-Regulatory Modules in Hematopoiesis**

A postdoctoral fellowship position is available in the lab of Yong Cheng in the Department of Hematology. The goal of this proposed study is to accurately identify causal Cis-regulatory module (CRM) variants that affect normal blood cell development and impact childhood blood disorders. We ask three fundamental questions: 1) How to systematically identify expression-sensitive genes? 2) How to decipher the causative mechanism of CRMs? 3) How can single-nucleotide variants (SNV) affect CRM functions? If successful, the proposed studies will identify functionally important CRMs controlling health-related traits and pinpoint pathological non-coding variants within those CRMs. Better understanding the anatomy and function of CRMs will facilitate precision medicine by allowing us to treat genetic diseases by manipulation of CRM function via gene editing or pharmacological approaches.

Requirements: PhD in genetics/genomics or molecular and cell biology, and experience with computational biology and bioinformatics.

Hematology Continued

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: PhD, and 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. 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: Candidates with a PhD in immunology or cell biology and a strong publication record 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).

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

Infectious Diseases

Jason Rosch, PhD **Bacterial Genomics and Metal Transport**

The Rosch Laboratory is seeking highly motivated and creative candidates for a fully supported postdoctoral fellowship focused on pneumococcal genetics and host-pathogen interactions.

Requirements: A recent PhD in Microbiology or a related field is required. 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.

Oncology

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. 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 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. 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. We aim 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 PhD 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.

Pathology

Jeffery Klco, MD, PhD **Genomic and Functional Characterization of Acute Myeloid Leukemia**

A post-doctoral fellowship position is available in the laboratory of Dr. Jeffery Klco to study the development of myeloid tumors in children. We are focused on the mechanisms of disease progression through the molecular characterization of different somatic and germline mutations in pediatric myeloid tumors, as well as the identification of vulnerabilities that may present unique therapeutic options. The experimental models include genetically-modified mice and the manipulation of primary hematopoietic cells, including cord blood CD34 cells and patient derived xenografts. Experience in genomic technologies is strongly encouraged as these studies are supplemented with RNA-seq, including single cell RNA-seq, and a variety of targeted sequencing modalities. The goal of these studies is to ultimately improve the outcome of children with AML and MDS through a better understanding of the disease pathogenesis.

Requirements: Highly motivated individuals with or soon to receive a PhD in molecular biology or related field are encouraged to apply.

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 PhD 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.

John Schuetz, PhD **ABC Transporters and Mitochondrial Biology**

A postdoctoral fellowship is available in the laboratory of Dr. John Schuetz in the Department of Pharmaceutical Sciences. Through a combination of genetic cell line models, biochemistry, systems biology and imaging, the Schuetz lab discovered that ABCC4 modulates the Hedgehog pathway to impact survival in a murine model of Hedgehog driven medulloblastoma. These studies uncovered new potential targets to improve not just medulloblastoma driven by aberrant Hedgehog signaling but have implications for many cancers driven by dysregulation of the Hedgehog pathway.

Requirements: The successful candidate will have a background in biology/ chemistry and cancer biology knowledge. In addition, skills in a variety of molecular techniques including immunoblotting, quantitative PCR, molecular cloning, mammalian tissue culture are needed as well as either animal experience or the desire to work with animal models.

Jun Yang, PhD **Pharmacogenomics of Anticancer Agents and Drug Resistance**

Our laboratory combines computational biology analyses of large genomic datasets with mechanistic studies using in vitro and in vivo model systems to dissect the cellular and molecular pathways underlying leukemogenesis and leukemia drug response. The successful applicant will have opportunities to develop new skills and work in a world-class scientific environment with full access to cutting edge tools and technologies. This is an ideal opportunity for an enthusiastic experimental biologist to ask fundamental and innovative questions in cancer biology and take that information to develop novel therapies for children with these catastrophic diseases while working in a lab with a robust track record of success.

Requirements: PhD in Cancer Biology, Pharmacology, Molecular Biology, or a related field; a strong track record of high-quality biomedical research, and an excellent publication record. Experience with multi-color flow cytometry, ELISA, Luminex, MACS cell sorting, and in vivo mouse modeling is preferred.

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: PhD 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

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

The Mittag laboratory is seeking 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. The successful candidate will join a highly collaborative laboratory focused on elucidating mechanisms and function of biomolecular condensates, with access to state-of-the-art instrumentation and expertise in NMR spectroscopy, X-ray crystallography, cryo-EM, single molecule techniques, and protein technology. The successful candidate will take a leadership role in connecting ongoing research projects related to SPOP biology and biophysics. The candidate will receive training in biophysics and cell biological approaches.

Requirements: Given that the project will involve interdisciplinary research at the interface of biophysics and cell biology, the successful candidate should have a PhD in *in vitro* structural biology/biophysics *or* cell biology. They will add to their experimental repertoire through tight integration in the Mittag and Hendershot labs. The candidate should demonstrate an academic record of excellence.

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: PhD 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.

Junmin Peng, PhD **Proteomics to Ubiquitin Biology and Human Disease**

Two postdoctoral positions are available in the lab of Dr. Junmin Peng. Our group has contributed to the discovery of ubiquitin code and numerous novel pathways in Alzheimer's disease. The successful applicant will have an opportunity to use a range of approaches, including mass spectrometry, single-cell proteomics, CRISPR and organoids to explore the pathogenesis of cancer or neurodegenerative diseases. The overarching aim is to study complex molecular interactions by chemistry, genetics and systems biology, providing novel insights into disease development, therapeutic intervention, and biomarker discovery for precision medicine.

Requirements: PhD in chemistry, biology, computer science or a related field or an MD degree. Experience in CRISPR/mouse genetics, stem cells/organoids, proteomics, systems biology is preferred but not required.

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.

Tumor Cell Biology

Martine Roussel, PhD **Pediatric Brain Tumors: Molecular Pathways, Mouse Models, and Pre-Clinical Trials**

Martine Roussel has four exciting new postdoc positions available in her lab. Project 1. MYCN is overexpressed in a variety of childhood cancers, and aberrant MYCN expression is universally associated with a highly aggressive clinical phenotype, metastatic dissemination and low survival rates. The postdoc will play a major role in an integrated and multidisciplinary effort to discover and develop PROTACs that will directly degrade the MYCN protein in pediatric solid tumors. Project 2. Develop novel targeted protein degradation approaches to selectively degrade key oncogenic transcription factors in high risk childhood leukemia and medulloblastoma, two of the leading causes of childhood cancer death. If successful, new therapeutic options for subtypes of pediatric cancers may be identified. Project 3. Medulloblastoma and pediatric brain tumors in general have a paucity of mutations (often epigenetic regulators). Therefore, we are testing the hypothesis that epigenetic regulators that are not mutated, amplified or deleted drive tumorigenesis in the absence of obvious drivers. Project 4. Atypical thyroid/rhabdoid tumors (ATRTs) are aggressive pediatric brain tumors that occur in very young children for whom novel therapies are warranted. We propose to conduct pre-clinical trials in patient-derived orthotopic xenograft (PDOX) models of ATRT to study the effect of compounds that target the p53 pathway in combination with radiation.

Requirements: Applicants with a background in cancer biology, chemical biology and/or pharmaceutical sciences are encouraged to apply. Expertise in using xenograft models and targeted protein degradation approaches is preferred.