2022 Mentor Directory: Summer Research Experience Program in Oncology for Medical Students

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Mentor	Research Areas	Project description
Ethan Abel *Dept. of* ***Molecular and Cellular Biology*** **www.roswellpark.org/Ethan-Abel** **Mentoring style-** *As a new investigator, my mentoring approach is very hands-on. I typically go into great detail with trainees as to what the hypothesizes we are trying to answer are, what techniques we will use to answer it and why, and the actual principles behind the techniques. I typically demonstrate techniques first, followed allowing students to do techniques in supervised manner until they are proficient, but remain regularly within reach for experimental guidance, technical support, or anything else a student has questions regarding.*	**Scientific Research** Cancer molecular and cellular biology;Cancer pharmacology and therapeutics	**Epigenetic targeting of pancreatic cancer stem cells** Students will test the effects of drugs called BET-inhibitors on pancreatic cancer stem cells (PCSCs), which are a subtype of cancer cell that fuels the tumor, as well as the interplay between BET-inhibitors and proteins that drive PCSCs. Students will use human cancer cells as models, and utilize protein, RNA, and DNA analyses in their studies. **Project phase:** Elements of all three (Design, Discovery, Validation) **Expectations of summer student-** *honest, and mutually respectful so as to promote and maintain a collaborative work environment that conducts high-quality science at all times. By the end of their time in the lab a summer student should be able to become proficient in a small number of routinely used techniques/approaches (generally 5 or less), and with guidance/supervision carry out a set of pre-designed experiments in a reproducible manner (at least 3 times) so that some conclusions regarding the questions behind the experiments can be confidently made (e.g. results support or refute the hypothesis). Students should gain a general/basic understanding of field the lab is in and the lab's overall research interests/goals and a solid understanding of why the experiments they are conducting are being done (e.g. what is their project about). I expect all trainees to be excited, hardworking, careful,*

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Andrei Bakin *Dept. of* ***Cancer Genetics*** **www.roswellpark.org/Andrei-Bakin** **Mentoring style-** *I have mentored over 20 summer students for the past 15 years participating in the program. I provide general guidance, my graduate students and a lab manager will help in planning, performing, and analysis of specific experimental techniques.* **Expectations of summer student-** *na*	**Scientific Research** Cancer genetics;Cancer molecular and cellular biology;Tumor immunology & immunotherapy;Cancer pharmacology and therapeutics	**New therapeutic strategies for cancers with specific genetic abnormality and immune microenvironment** Metastatic breast cancer (MBC) is a deadly disease and novel therapeutic approaches are urgently needed. The first project deals with tumor-immune interplay. The tumor microenvironment (TME) has evolved as a complex and dynamic network of intercellular interactions that influences tumor formation, progression, and response to therapy. To this end, we identified a specific signaling pathway that controls immune composition in the TME. The goal of the project is to define the impact of systemic blockade of this pathway on immune cell composition in MBC models in mice. The second project investigates new drug combination therapies for cancers with a genetic alteration in the p53 tumor suppressor using breast, pancreatic, and colon cancer models. The goal is to develop a drug combination therapy that selectively damages p53-deficient cancers. Students will become familiar with the following techniques: mammalian cell culture, immunoblotting (western), quantitative PCR, flow cytometry, microscopy (bright field and IF), CRISPR technology, single cell RNA sequencing; potentially with animal studies using mouse and patient-derived material (PDX). **Project phase:** Elements of all three (Design, Discovery, Validation)
Anna Bianchi-Smiraglia *Dept. of* ***Cell Stress Biology*** **www.roswellpark.org/Anna-Bianchi-Smiraglia** **Mentoring style-** *Open door policy for any question, suggestion, issue, etc. Ready to lend a hand when needed but not constantly over people's shoulder. Promoting independence and critical thinking* **Expectations of summer student-** *To be curious about science and the work being performed. To be responsible and committed. To work with integrity and as a team player.*	**Scientific Research** Cancer molecular and cellular biology	**metabolic alterations in cancer** We have two projects running in the lab: the first one revolves around the role of GTP metabolic enzymes to support the growth and metastasis of triple negative breast cancer cells. The second one is investigating the role of the aryl hydrocarbon receptor in MYCN-amplified neuroblastoma. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Dhyan Chandra *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Dhyan-Chandra** **Mentoring style-** *Provide opportunities to brainstorm ideas. Encourage student to ask questions. Guide student to develop collaborative skills to understand scientific research project.* **Expectations of summer student-** *I expect summer students to learn new ideas and approaches. I expect them to brainstorm these ideas/approaches during laboratory meeting or discussion. These activities will help student developing independent thinking process in scientific research.*	**Scientific Research** Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Urology	**Mitochondrial Regulation of Cell Death and Resistance in Cancer** The main focus of our research is to understand the molecular basis of therapy resistance in multiple cancer types including in prostate, breast, pancreatic, and colon cancers. To accomplish our goals, we are investigating two different, but complementary projects. The first project delineates how mitochondria-mediated cell death signaling is defective in cancer cells and cancer stem cells. The second project defines the role of heat-shock proteins in cancer cell survival and death. We are also characterizing the role of mitochondria in health disparities among prostate and breast cancer patients. Our research suggests that protein complexes are important regulators of cancer cell death and survival. We use multiple biochemical, genetic, cellular, mouse models of cancer, and molecular approaches to identify and characterize protein complexes in subcellular compartments including in the mitochondrion. Detailed understanding of protein complexes will lay a foundation for targeting cell death and survival machinery for cancer therapy. Our model systems include both laboratory cell culture, patient-derived models, and mouse models of cancer to examine cellular signaling in response to anticancer agents. Our ultimate goals are to understand mitochondrial biology in cancer and target mitochondria for prevention and therapy of multiple types of cancer. **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis
Todd Demmy *Dept. of* ***Thoracic Surgery*** **www.roswellpark.org/Todd-Demmy** **Mentoring style-** ***na*** **Expectations of summer student-** ***na***	**Clinical Research** Thoracic Surgery;Cancer pharmacology and therapeutics;Other (please specify)	**Pulmonary Suffusion for Metastatic Sarcoma** The goal of this research project will be to study the outcomes of patients who undergo a new minimally invasive form of regional lung chemotherapy to address sarcoma tumors that have spread to the lung. Projects available for participation are designing **Project phase:** Elements of all three (Design, Discovery, Validation)

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Prasenjit Dey *Dept. of* ***Immunology*** **www.roswellpark.org/Prasenjit-Dey** **Mentoring style-** *Folks in my lab are highly collaborative and we work as a team.* **Expectations of summer student-** *You will be exposed to various molecular biology, immunology, genetics and biochemistry tools. Along with that you will see how tumor evolves in animal model of cancer.*	**Scientific Research** Cancer genetics;Cancer molecular and cellular biology;Tumor immunology & immunotherapy	**Role of tumor microenvironment in pancreatic tumor** A major component of tumor microenvironment is the secreted factors arising from infiltrating immune cells, stroma, intra-tumor microbiome and cancer cells itself, which shapes the overall trajectory of the disease. We will evaluate the components that directly support pancreatic cancer initiation, progression and metastasis. and progression. **Project phase:** Elements of all three (Design, Discovery, Validation)
Irwin Gelman *Dept. of* ***Cancer Genetics*** **www.roswellpark.org/Irwin-Gelman** **Mentoring style-** *I spend a lot of time up front teaching background and technical skills, but then allowing the intern to work with lab students on their project.* **Expectations of summer student-** *Expectations include learning some background via papers I will assign, then shadowing a graduate student to learn technical skills. Finally, the intern is expected to develop some independence to perform experiments and to produce graphical (and possibly publishable) representations of their data.*	**Scientific Research** Cancer genetics;Cancer molecular and cellular biology	**The role of AKT isoform-specific substrates in promoting prostate cancer progression** The intern will test, using mouse and human prostate cancer cell lines that vary in their PTEN status, how specific substrates controlled by AKT2 or AKT3 Src controls parameters of disease aggressiveness in vitro. This will involve cell culture, transfection, protein staining, fluorescence microscopy and signaling analysis (e.g.- immunoblots). **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis

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Katerina Gurova *Dept. of* ***Cell Stress Biology*** **www.roswellpark.org/Katerina-Gurova** ***CSTEP Peer-to-Peer Program?*** **No** **Mentoring style-** *I like to discuss with a student major concepts and puzzling questions and then allow student to read a learn and come back with questions. As a hand on experience I am ready to give all necessary instructions and examples but then allow student to do work independently.* **Expectations of summer student-** *Be interested in science and cancer Understand major concepts of molecular and cellular biology be willing to work hard and learn a lot.*	**Scientific Research** Cancer bioinformatics;Cancer biophysics;Cancer molecular and cellular biology;Cancer pharmacology and therapeutics	**Comparison of chromatin organization and function between tumor and normal cells.** Cancer is disease of uncontrolled proliferation. However, just proliferating cells are not so dangerous for an organism. The property which makes cancer dangerous or aggressive is an ability of cancer cells to endless adaptations. Aggressive cancer cells can change their phenotype easy and quickly what helps them to survive in almost any conditions. Traditionally we through that genomic instability and high mutational rate were responsible for this. However, more and more data are accumulated that these changes of cancer phenotype are transitory and reversible, and therefore non genetic. We believe that specific state of cancer cell chromatin is responsible for this phenotypic plasticity (also known as epigenetic plasticity). We are trying to find what specific properties of chromatin underlie phenotypic plasticity of tumor cells and how they can be utilized for cancer treatment. Our goal is to compare normal and tumor cells chromatin to identify the mechanism enabling epigenetic plasticity of tumor cells. Projects include understanding of how chromatin stability is achieved in normal cells, how it is broken in tumor cells, what cellular factors are involved in chromatin stability regulation and maintenance and how we can use small molecules affecting chromatin stability for cancer treatment. This work include molecular biology experiments, biochemistry, cell culture and animal studies as well as bioinformatic approaches. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Nitai Hait *Dept. of* ***Molecular and Cellular Biology*** **www.roswellpark.org/Nitai-Hait** **Mentoring style-** *As a mentor, I will be supportive and enthusiastic with students. I will help students generating a hypothesis, exploratory ideas, designing and execute experiments, collect data, analyze and present data, finally, a publishable figure.* **Expectations of summer student-** *During the internship, the student should have the motivation to learn, gathering knowledge, and hands-on experiences.*	**Scientific Research** Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Tumor immunology & immunotherapy	**Mechanisms by which sphingolipid mediators impact tumor progression and metastasis** My research interests focus on the role of sphingolipid mediators, sphingosine-1-phosphate (S1P), and ceramide-1-phosphate (C1P) in breast cancer progression and metastasis. We use patient-derived 3D cell models, molecular biology techniques, and genetic animal models to study sphingolipid mediators signaling in inflammation and cancer. We are also interested in identifying novel molecular targets and underlying mechanisms of actions for tumor metastases. Significant projects: i) to determine the role of S1P as a cofactor in regulating master transcription factors (HIFs, STATs, NF-kB) functions in tumor metastasis; ii) to determine the role of C1P/ceramide kinase in tumor metastasis; iii) to determine the role of sphingolipid mediators in the tumor microenvironment and metastasis. We have various small projects on the role of mediator signaling in the tumor microenvironment and metastasis suitable for students. Student can be a co-author for peer-review publications. **Project phase:** Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper

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Wendy Huss *Dept. of* ***Cell Stress Biology*** **www.roswellpark.org/Wendy-Huss** **Mentoring style-** *Meet regularly with student to review data and discuss meeting.* **Expectations of summer student-** *Students should be comfortable using computer programs, will need to analyze images with established software. Student should be able to work independently once oriented with technique and software.* *Student will have to provide a written synapsis of background literature.*	**Scientific Research** Dermatology;Urology;Cancer genetics	**Detection of carcinogen induced DNA damage and clonal expansion in bladder and skin cancer initiation.** Potential students will be testing the impact of carcinogen induced p53 mutations on clonal expansion of bladder urothelial and skin epidermis cells in animal models exposed to a smoking mimicking carcinogen and UV light respectively. Students will perform a current literature review of both models with a focus on the role of p53 mutations in tumor initiation and progression. Students will review tissue slides procured from the models to associate pathology (as determined by collaborating Pathologist), clonal expansion based on cell proliferation (determined by immunohistochemistry (IHC) for proliferation marker Ki67), and mutant p53 expression (determined by immunohistochemistry for mutant p53). P53 mutations and other mutations will be confirmed by DNA sequencing. These results will be presented at local poster presentations and will be a part of a manuscript. The long term goal is to test if p53 mutation status can be predicted by cell clonal expansion detected with Ki67 IHC. **Project phase:** Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper
Fengzhi Li *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Fengzhi-Li** ***CSTEP Peer-to-Peer Program?*** **No** **Mentoring style-** *Signed the project and let the lab members help for the internship to finish the project/word.* **Expectations of summer student-** *Dedicated to the work signed and take the research work seriously.*	**Scientific Research** Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Anticancer drug development and mechanistic study	**Study the novel anticancer drug FL118 mechanism of action in pancreatic cancer** The student will be trained for basic technology (e.g. cell culture, western blots, etc.) for studying drug action mechanism. the goal is for the student to be family with lab anticancer drug research. **Project phase:** Elements of all three (Design, Discovery, Validation)

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William Magner *Dept. of* ***Head and Neck Surgery*** **www.roswellpark.org/William-Magner** **Mentoring style-** *We maintain multiple projects at different stages employing several approaches so communication is key. We attempt to understand each student's interests and goals then match them with appropriate project options. My colleagues and I are all accessible but busy so we are happy to make time to teach and support student projects but rely on student initiative to address interests, skills and needed support.* **Expectations of summer student-** *Student success is directly proportional to their effort; therefore, we expect students to put in full days of sincere effort. Students need to take initiative and work as independently as possible but we will train and support every effort. Student need to communicate clearly their interests, skills and needs.*	**Scientific Research** **Clinical Research** Cancer bioinformatics;Cancer biostatistics;Cancer molecular and cellular biology;Tumor immunology & immunotherapy; Medical Oncology;Surgical Oncology	**Translational Research in Head & Neck, Plastic & Reconstructive Surgery** The Head and Neck Cancer Translational Laboratory carries out multiple projects with the goal of improving treatment responses in head and neck cancers. Current projects investigate immune features of the tumor microenvironment that affect tumor growth and response to therapy. We use human and mouse cell lines in vitro as well as patient samples and mouse models. In silico studies of gene expression differences may help characterize head and neck tumor behavior. **Prospective and retrospective studies in Head & Neck, Plastic Reconstructive Surgery** The Department of Head & Neck, Plastic & Reconstructive Surgery includes 11 surgeons with broad surgical specialties and research interests including surgical technique, patient outcomes, and complications among other issues. Our tools include prospective **Project phase:** Elements of all three (Design, Discovery, Validation)

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Kent Nastiuk *Dept. of* ***Cancer Genetics and Genomics, Urology*** **www.roswellpark.org/Kent-Nastiuk** **Mentoring style-** *My ultimate goal is to give the trainee experience as an independent researcher. I think this requires working collaboratively to tackle a significant problem, but give the time limits, this is likely limited to a small part of a larger project. My role is to develop both technical and critical thinking skills, while helping the trainee to gain both the specific and broad knowledge necessary to produce new knowledge. I see success as clear communication of the products of the internship.* **Expectations of summer student-** *I value students of diverse backgrounds with a passion for science, and both strong quantitative and critical thinking skills. I expect students to: 1) communicate! 2) work hard during your limited time in the lab 3) be a good lab citizen 4) be flexible! Sometimes science doesn't take you down the path you expect. I expect summer students will attend all appropriate lab meetings and seminars.*	**Scientific Research** Cancer experimental diagnostics;Cancer genetics;Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Urology	**muscle loss during androgen deprivation therapy for prostate cancer, or imaging of prostate cancer** My lab studies androgen regulated growth and apoptosis signaling pathways in prostate cancer. Androgen deprivation therapy (ADT) causes frailty so a major focus is examining the mechanism of (cytokines that signal) ADT-induced muscle loss. We are also developing targeted molecular agents for both MR and PA imaging of prostate cancer (with Hans Schmitthenner, RIT). Interns will tackle a small chunk of one of these projects. **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis

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Chukwumere Nwogu *Dept. of* ***Thoracic Surgery*** **www.roswellpark.org/Chukwumere-Nwogu** **Mentoring style-** *My mentorship style involves coaching with gradually increasing responsibility. This will involve study, writing, presenting locally and at a national meeting.* **Expectations of summer student-** *I expect an intern to attend rounds, observe in the clinic and operating room while taking on a research project. I will expect the student to also participate in research meetings, perform literature reviews and perform chart reviews or other research tasks that are well within his/her capabilities. This will lead to writing an abstract and a manuscript under supervision. A brief presentation at a national surgical meeting is also a common accomplishment that my interns achieve.*	**Clinical Research** Surgical Oncology;Other (please specify);Thoracic Surgery	**Technology Enhanced Multidisciplinary Oncology Care** This Internship offers the opportunity to participate in evaluating and enhancing multidisciplinary tumor board conferences in three disease sites - Thoracic, Breast and Gynecology Oncology. There will be exposure to thoracic surgery clinics and operative **Project phase:** Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper

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Scott Olejniczak *Dept. of* ***Immunology*** **www.roswellpark.org/Scott-Olejniczak** **Mentoring style-** *I believe that everyone learns differently and I hope to provide a space in which students can learn and grow at their own pace. I aim to provide enough mentoring to guide the projects in my lab without limiting the creativity of my students.* **Expectations of summer student-** *Students should be curious, hard working and responsible.*	**Scientific Research** Cancer molecular and cellular biology;Tumor immunology & immunotherapy	**Molecular mechanisms of cancer immunotherapy** The Olejniczak lab focuses on molecular changes that occur in immune cells as they respond to cancer immunotherapy. Summer students will work collaboratively with members of the Olejniczak lab to explore novel and exciting ways immune cells are reprogrammed by cancer immunotherapies in order to kill tumor cells. Summer projects will provide an opportunity for students to gain first hand experience with cutting-edge approaches and technologies being used to improve immunotherapy for cancer.. **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis

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Gyorgy Paragh *Dept. of* ***Dermatology & Cell Stress Biology*** **www.roswellpark.org/Gyorgy-Paragh** **Mentoring style**- *In the laboratory, you will test your ability to ask questions and find answers in one of the ongoing research projects. Based on your interest, you will select your project from a wet-lab and in silico project and work with a Ph.D. on your independent or supportive subproject. We provide an environment to understand basic research concepts and techniques, learn about scientific presentation and writing and expand your understanding of early carcinogenesis.* **Expectations of summer student-** *Come with enthusiasm to learn, a tenacity to find answers, and be a superb team player.*	**Scientific Research** Cancer genetics;Cancer prevention and epidemiology;Cancer bioinformatics;Dermatology	**Advancing skin cancer prevention by tackling UV-induced clonogenic mutations** Squamous cell skin cancer is the second most common cancer in the US. There are methods available to prevent skin cancer but are not widely used because we lack methods of evaluating their effectiveness in a timely manner. Sun induced genomic damage as measured by UV-induced clonogenic mutations (CM) can be used as way of evaluating early treatment strategies and sun protection interventions. CM are in low abundance in the skin which make them very difficult to detect. However recent advances in genomic sequencing allows accurate identification and quantitation of CMs in the skin using ultra-deep targeted sequencing. This approach gives estimates of size and number of CMs. Preliminary data has identified specific region of the genome that have mutations associated with sun damage in the skin. These regions are also found in precancerous and cancer lesions. The central hypothesis for this application is that CMs are biomarkers of sun induced skin damaged and that CMs can measure the how well strategies for skin cancer prevention and treatment work. In the first set of studies, we will refine the previously developed panel of sun induced CMs by identifying the most common CMs in sun exposed versus non-sun exposed skin in humans and mice. Subsequent studies will examine the impact of UV exposure on changes the CM panel and development of skin cancer. These studies will evaluate patterns of CMs and the risk of developing skin cancer. Next, the refined panel of CMs will be used to examine how well treatments designed to prevent skin cancer in heavily sun damaged skin areas reduce CMs and skin cancer formation. In the final set of studies, CMs will be used to evaluate the efficacy of sun protection strategies, such as sunscreens. These studies will change how we evaluate a patient's risk of developing skin cancer and how we determine the effect of skin cancer prevention. These studies have the potential to shift the focus from treating cancer to preventing the occurrence of skin cancer and will have implications on other cancer types. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Amanda Quisenberry *Dept. of* ***Health Behavior*** **www.roswellpark.org/Amanda-Quisenberry** **Mentoring style-** *I am an interactive, involved mentor with a desire to share my work and motivate young investigators.* **Expectations of summer student-** *The summer intern will be trained in using behavioral economic and eye tracking methodologies, how to collect quality data from human participants, and how to clean and organize data for analysis. The opportunity for data analysis and manuscript preparation exists based on interest and skill level.*	**Scientific Research** Cancer prevention and epidemiology	**Tobacco Product Consumption under Hypothetical Flavor Policy Environments Using Behavioral Economic and Eye Tracking Methods** The goal of this project is to identify the behaviors of menthol smokers when various hypothetical tobacco flavor policies are enacted using the Experimental Tobacco Marketplace. Eye tracking methodology is enacted simultaneously, measuring objective attention to product components while purchasing under these conditions. Research tasks will include collecting and analyzing data with opportunity for manuscript preparation. Involvement in other ongoing studies of the behavioral economics of tobacco products is also possible. **Project phase:** Elements of all three (Design, Discovery, Validation)
Denise Rokitka *Dept. of* ***Pediatrics*** **www.roswellpark.org/Denise-Rokitka** **Mentoring style-** *Provide supportive environment to learn about clinical research* **Expectations of summer student-** Data review, Analysis, Manuscript Writing	**Clinical Research** Pediatrics;Cancer survivorship	**Pediatric Clinical Survivorship** Long term emotional and physical side effects of pediatric cancer survivors. Data management, data collection. **Project phase:** Validation- confirming previous data/results with concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper.

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Mukund Seshadri *Dept. of* ***Oral Oncology/Dentistry and Maxillofacial Prosthetics*** **www.roswellpark.org/Mukund-Seshadri** **Mentoring style-** *Democratic but expect interns to be professional in their interactions and diligent with an outstanding work ethic.* **Expectations of summer student-** *Motivated, willing to take ownership of the work*	**Scientific Research** **Clinical Research** Cancer biophysics;Radiation Oncology;Cancer experimental diagnostics;Medical Oncology;Surgical Oncology;Oral Medicine;Cancer pharmacology and therapeutics;Cancer prevention and epidemiology	**Developing novel combination strategies for oral cancer** Research in my laboratory is focused on three main areas: (i) understanding the vascular biology of head and neck cancers and exploiting them for therapeutic benefit, (ii) development of safe and effective bio-adjuvant approaches for the prevention of oral cancers and, (iii) the use of advanced imaging methods such as MRI, CT in preclinical models and in patients to study response of head and neck tumors to chemotherapy and radiation. The work is interdisciplinary in nature and draws on concepts from biophysics, cancer biology, pharmacology and molecular biology. Given my clinical background, I feel strongly about pursuing a research program that addresses clinically-relevant questions in the laboratory setting and potentially translates the knowledge gained into meaningful outcomes for patients. **Integrating AI/Machine Learning for Early Detection and Prognostication** We are investigating the potential of integrating artificial intelligence (AI) and machine learning (ML) with imaging methods to determine if the diagnostic or prognostic performance of traditional imaging methods such as MRI, CT and US can be improved. **Project phase:** Elements of all three (Design, Discovery, Validation)
Gal Shafirstein *Dept. of* ***Cell Stress Biology*** **www.roswellpark.org/Gal-Shafirstein** **Mentoring style-** *A teamwork that includes students, faculty and outside collaborators. Use weekly lab meetings for reporting results, presentation of new ideas. I have an open-door policy for research discussions as needed.* **Expectations of summer student-** *Conduct experiments with supervision from graduate students in the lab. Document the work done. Record results. Present results and plans in our weekly lab meetings.*	**Scientific Research** Photodynamic Therapy;Cancer biophysics;Surgical Oncology	**Treatment Planning and Light Dosimetry in Photodynamic Therapy (PDT)** My research team is focused on the development and implementation of treatment planning and light dosimetry in PDT. My group includes 1 pre-doctoral student, a post doctoral and a technician. We collaborate with physicians, and faculty with expertise in radiation biology, biostatistics, and imaging at Roswell Park, and drug developers at other research institutes. We do preclinical and clinical studies, and investigate combination therapies. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Anurag Singh *Dept. of* ***Radiation Medicine*** **www.roswellpark.org/Anurag-Singh** **Mentoring style-** *Close oversight with concurrent exposure to the clinic* **Expectations of summer student-** *40 hours of work per week including 2 days/week in clinic*	**Clinical Research** Radiation Oncology;Cancer pharmacology and therapeutics	**Clinical Research Project in Radiation Medicine** The goal of our clinical research overall are to assess administration of radiation treatment regimens in relationship to survival outcomes. Projects involve existing data and chart review. Projects will vary for the summer program. Past project titles t **Project phase:** Elements of all three (Design, Discovery, Validation)
Joseph Skitzki *Dept. of* ***Immunology*** **www.roswellpark.org/Joseph-Skitzki** **Mentoring style-** *Drs. Fisher and Kim run the day to day lab activities and are excellent teachers, I will provide oversight and an opportunity to see my clinical practice of surgical oncology* **Expectations of summer student**- *to be enthusiastic, to be proactive in their learning, and to develop as a learner*	**Scientific Research** **Clinical Research** Tumor immunology & immunotherapy;Surgical Oncology	**real-time monitoring of anti-cancer immune responses** My laboratory focuses on the understanding of how lymphocytes trafficking to sites of tumor during immunotherapy. Recent advances in intravital microscopy are being leveraged for clinical translation. Specific projects in the lab are: 1. To evaluate reagents for human lymphocyte labeling 2. To determine if endogenous lymphocyte activity can be followed over time in mouse models 3. To develop analytical methods for intravital microscopy **observership in surgical oncology** I am a surgical oncologist in the area of soft tissue surgery. My focus is on melanoma and regional therapies for cancer. There are opportunities for an interested student to observe our clinic and OR practice. A melanoma clinical database exists along **Project phase:** Elements of all three (Design, Discovery, Validation)

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Pamela Sung *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Pamela-Sung** **Mentoring style-** *I plan to meet one-on-one with a student on at least a weekly basis to discuss the project and ensure that the experience is catered to the student's educational goals. I believe in maintaining a good work-life balance and have no set hours that one "must" be in lab, so long as you continue to be productive.* **Expectations of summer student-** *I expect students to be engaged in understanding the rationale behind the experiments and learn techniques to be able to perform them independently. Students will have their own project, but are welcome to be involved with other ongoing projects in the lab.*	**Scientific Research** Cancer pharmacology and therapeutics	**Novel therapies in Acute Myeloid Leukemia** My laboratory focuses on a pathway (FLT3) that is frequently abnormal in acute myeloid leukemia (AML), which is a blood cancer affecting people of all ages. A drug targeting FLT3 was FDA approved recently. While it is effective, it is not curative. My goal is to better understand the biology of FLT3, so we can improve upon this therapy. We use a number of techniques including molecular biology, cell culture, flow cytometry, and mouse modeling. As a leukemia physician, I hope these studies will lead to clinical trials for AML. **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis
Li Tang *Dept. of* ***Cancer Prevention and Population Sciences*** **www.roswellpark.org/Li-Tang** **Mentoring style-** *I believe that teaching is to introduce but not to force-feed knowledge.* **Expectations of summer student-** *The expectation is that the summer student may be inspired and prepared to embark on the pursuit of careers in biomedical research.*	**Scientific Research** Cancer molecular epidemiology;Cancer prevention and epidemiology	**Gene, Diet, and their interactions contributing to cancer characteristics and prognostic outcomes** Our research program is engaged in molecular epidemiological study of cancer and is developed in two directions with a central theme of enhancing treatment efficacy and improving cancer prognosis. The first direction is to understand the role of gene-diet interaction in cancer prognosis and treatment outcome. The primary focus is on cruciferous vegetables and their key anti-cancer effectors, the phytochemical isothiocyanates. The second research direction is to understand the biological basis for cancer characteristics. The particular interest is in genetic and epigenetic contributions to racial disparities in cancer aggressiveness. The goal is to target high risk population with specific lifestyle and/or dietary intervention approaches to decrease cancer mortality. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Eunice Wang *Dept. of* ***Medicine*** **www.roswellpark.org/Eunice-Wang** **Mentoring style-** *Physician-scientist with translational research focus. Direct supervision by experienced lab staff with weekly meetings with mentor and lab meetings for data presentation and discussion* **Expectations of summer student-** *Motivated student able to design and perform hands on experiments and critically analyze results. Strong work ethic and ability to work independently.*	**Scientific Research** Cancer pharmacology and therapeutics;Medical Oncology;Cancer molecular and cellular biology;Tumor immunology & immunotherapy	**Novel Biological Therapies for Acute Leukemia** Our laboratory research focuses on the preclinical assessment and development of novel therapeutic strategies for acute leukemia. We are specifically interested in how interactions between tuOur lab investigates novel therapeutics for the treatment of acute myeloid leukemia (AML). We conduct translational research using human AML cell lines and patient samles in vitro followed by in vivo studies of human AML xenografts in mice. We have multiple areas of ongoing research and are accepting students: PARP inhibition in AML, Menin inhibitor combinations, autophagy and hypoxia in AML. Motivated students will learn the basics of experimental design, laboratory calculations, sterile cell culture, proliferation and apoptosis assays, colony formation assays using primary leukemia patient samples, flow cytometry, and bioluminescent mouse models. The goal of our translational laboratory research is to identify and prioritize agent for rapid translation into early stage clinical trials.. **Project phase:** Elements of all three (Design, Discovery, Validation)
Lei Wei *Dept. of* ***Bioinformatics/Biostatistics*** **www.roswellpark.org/Lei-Wei** **Mentoring style-** *Flexible* **Expectations of summer student-** *The trainee will be expected to: 1) develop a good understanding of cancer NGS data; 2) by doing literature search and data-mining, identify novel mutations/mechanisms that may contribute to tumor initiation, progression and recurrence; 3) contribute to scientific publications.*	**Scientific Research** Cancer bioinformatics	**Characterize somatic mutations in cancer genomes** Next generation sequencing (NGS) is providing an efficient system for characterizing cancer genomes. By comparing with the matched normal DNA, we can identify additionally acquired mutations, so called somatic mutations in cancers. Certain somatic mutations may directly contribute to tumorigenesis process by disrupting tumor suppressors or activating oncogenes. Identifying such driver mutations is an important step for understanding the mechanism of cancers and facilitating the development of personalized treatments. The current research will work on the somatic mutations found by NGS in various cancer types. The trainee will be expected to: 1) develop a good understanding of cancer NGS data; 2) by doing literature search and data-mining, identify novel mutations/mechanisms that may contribute to tumor initiation, progression and recurrence; 3) contribute to scientific publications. **Project phase:** n/a

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Anna Woloszynska-Read *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Anna-Woloszynska-Read** **Mentoring style**- *I encourage creativity and inquisitiveness. I expect questions and self-motivation. I am not a micromanager, but I put a lot of emphasis on punctuality, honesty, and reliability. I am always available to discuss any and all aspects of a student training. I enjoy one on one mentoring and appreciate true excitement a student shows about their work.* **Expectations of summer student-** *I expect a summer student (any level of education) to be actively engaged in the laboratory by asking questions, interacting with lab members, and frequently scheduling meetings to discuss their progress with me.*	**Scientific Research** Cancer genetics;Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Urology;cancer epigenetics	**Genetic and epigenetic regulation in genitourinary cancers** There are two lines of research in our laboratory, both focus on genitourinary malignancies. Below are short descriptions of the two areas. A prospective student will be able to choose which to pursue as a summer project. 1) African American (AA) men are at increased risk of developing and dying of advanced prostate cancer at a younger age compared to European American (EA) men. Although AA men are more severely affected by prostate cancer, majority of the comprehensive molecular studies thus far mostly include prostate tumors from EA men. Comprehensive genetic and epigenetic profiling of EA and AA tumors in our currently funded DOD application has facilitated the identification of key pathways unique to AA prostate cancer patients. The current proposal expands upon our previous work and will delineate signaling mechanisms of the GATA4 and androgen receptor (AR) axis and its role in prostate cancer biology in AA men. Furthermore, our current proposal will construct dynamic network models that integrate preclinical experimental results with observations from clinical prostate cancer samples. These networks will facilitate the identification of molecular features crucial for drug sensitivity as well as discovery of actionable therapeutic targets unique to prostate cancer from AA men. 2) Less than 20% of patients with advanced Muscle Invasive Bladder Cancer (MIBC) survive 5 years due to lack of curative treatment. The impact of our research is two-fold. First, it will contribute to the identification of new druggable molecular targets for treating MIBC. Understanding the impact of STAG2 invasion and its role independent of cohesin complex will point towards new ways of targeting bladder tumors. Second, it has been shown that glioblastoma cells containing mutations in STAG2 are sensitive to PARP inhibition. STAG2 is frequently mutated genes in bladder cancer. If STAG2 mutation status can guide patient treatment stratification, there is potential for finding more effective ways of treating bladder cancer patients whose options are very limited at this time. **Project phase:** Elements of all three (Design, Discovery, Validation)

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Jianmin Zhang *Dept. of* ***Cancer Genetics*** **www.roswellpark.org/Jianmin-Zhang** **Mentoring style-** *My office door is open all the time to the student and I'm ready to provide the mentorship to the student. In the meanwhile, I give the freedom to student to pursue the exciting scientific project in any aspect.* **Expectations of summer student-** *I expect a summer student self-motivated; enthusiastic on cancer research; purpose driven.*	**Scientific Research** Cancer genetics;Cancer molecular and cellular biology;Cancer pharmacology and therapeutics;Tumor immunology & immunotherapy	**Elucidating the mechanism of breast tumor cell plasticity and tumor metastasis** Breast cancer metastasis remains the defining feature of advanced malignancy and is responsible for approximately 90% of breast cancer related deaths. Despite the intensive research in this area, how tumors spread and kill their host organisms remains poorly understood. Metastasis consists of a series of severe obstacles/challenges that cancer cells must overcome. Each one is highly inefficient and stochastic; therefore, we cannot predict whether, when, and where it will occur. Notably, tumor cell fitness or adaptability is encoded by gene gene expression programs (GEPs) that allow BC cells to exploit specific aspects of their microenvironment and ultimately remodel that microenvironment to fuel tumor colonization and growth. Using a systems approach that integrates gene expression and genetic perturbation experiments, we found that the transcriptional coactivator with PDZ–binding motif (TAZ) is a master regulator of advanced metastatic breast cancer (MBC)–related GEPs. The internship will be offered in my lab: using molecular biology approaches, tissue culture and xenograft mouse model to understand how TAZ activation driven MBC and its cross-talk with tumor microenvironment (TME). **Project phase:** Elements of all three (Design, Discovery, Validation)

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Yuesheng Zhang *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Yuesheng-Zhang** **Mentoring style-** *Expect motivation, hard work, and productivity.* **Expectations of summer student-** *The intern should have some previous experience in wet lab research in biochemistry, biology, pharmacology or cancer research.*	**Scientific Research** Cancer pharmacology and therapeutics	**Targeting ErbB receptor tyrosine kinases in cancer** Cell membrane-bound ErbB receptor tyrosine kinases, particularly ErbB1 and ErbB2, are major oncogenic drivers and cancer therapeutic targets. We have recently found that a novel human protein targets both ErbB1 and ErbB2 and are doing research to better understand its antitumor activity. **Project phase:** Design- early stage development of experimental components/methodologies with a concentration on techniques