

Table of Contents

Mentor	Department	Research Project	Pg
Lei Wei	Bioinformatics/Biostatistics	Identifying driver mutations by using next generation sequencing (NGS)	1
Elizabeth Bouchard	Cancer Control and Prevention	Examining Experiences of Cancer Caregivers	1
Anna Bianchi-Smiraglia	Cell Stress Biology	GTP metabolism in breast cancer	2
Subhamoy Dasgupta	Cell Stress Biology	Metabolic Control of Tumor Progression and Metastasis	2
Gal Shafirstein	Cell Stress Biology	Treatment Planning and Light Dosimetry in Photodynamic Therapy (PDT)	3
Amanda Quisenberry	Health Behavior	Tobacco Product Consumption under Hypothetical Flavor Policy Environments Using Behavioral Economic and Eye Tracking Methods	3
John Ebos	Medicine	Resistance and metastasis following tumor microenvironment inhibition	4
Marc Ernstoff	Medicine	Exosome modulation of immune regulation	5
Ethan Abel	Molecular and Cellular Biology	Epigenetic targeting of pancreatic cancer stem cells	6
Nitai Hait	Molecular and Cellular Biology	Mechanisms by which sphingolipid mediators impact tumor progression and metastasis	7
Dimiter Kunnev	Molecular and Cellular Biology	DNA replication as cell cycle regulation in cancer cells	7
Mukund Seshadri	Oral Medicine/Head and Neck Surgery	Multi-modal Imaging of Cancer	8
Dhyan Chandra	Pharmacology and Therapeutics	Mitochondrial Regulation of Cell Death and Resistance in Cancer	8
Xiang Ling	Pharmacology and Therapeutics	Anticancer drug evaluation and mechanism study	9
Xinjiang Wang	Pharmacology and Therapeutics	Development of Novel Targeted Therapies for Leukemia Treatment	9
Anna Woloszynska-Read	Pharmacology and Therapeutics	Genetic and epigenetic regulation in genitourinary cancers	10
Anurag Singh	Radiation Medicine	Clinical Research Project in Radiation Medicine	11
Chukwumere Nwogu	Thoracic Surgery	Minimally Invasive Thoracic Surgery Clinical Outcomes	11
Khurshid Guru	Urology		12
Yue Wu	Urology	Understanding Progression of Prostate Cancer to Castration Re-Current Disease	13

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Lei Wei</p> <p>Dept. of Bioinformatics/Biostatistics</p> <p>www.roswellpark.org/Lei-Wei</p> <p>Mentoring style- Flexible.</p> <p>Expectations of summer student- The student should become familiar with Excel, and feel comfortable with learning at least one programming language such as R, especially the graphic package ggplot2.</p>	<p>Scientific Research</p> <p>Cancer bioinformatics; Cancer genetics</p>	<p>Identifying driver mutations by using next generation sequencing (NGS)</p> <p>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.</p> <p>Project phase: Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper</p>
<p>Elizabeth Bouchard</p> <p>Dept. of Cancer Prevention and Control</p> <p>www.roswellpark.org/Elizabeth-Bouchard</p> <p>CSTEP Peer-to-Peer Program? Yes</p> <p>Mentoring style- Eager to involve trainees in all aspects of the research process, including interacting with research participants. Excited to expose trainees to social science research, and how it applies to medicine.</p> <p>Expectations of summer student- Comfortable interacting with cancer patients and their caregivers. Interested in learning more about sociology and health disparities research. Interested in learning about social science research methods.</p>	<p>Scientific Research</p> <p>Sociology; Pediatrics</p>	<p>Examining Experiences of Cancer Caregivers</p> <p>The goal of the research in our lab is to understand experiences of informal cancer caregivers (non-professional caretakers, often family members). Our research is social science oriented, mostly based in sociology. There are three main research studies we are currently working on: (1) understanding how social network experiences shape caregiver stress among parents of pediatric cancer patients, (2) testing an intervention to improve parents' abilities to administer medication to young children, and (3) understanding "stress contagion" among patients and their caregivers (e.g. does caregiver stress shape patient cancer outcomes?). types of work involved include management of survey data, helping collect survey data, interacting with study participants, attending lab meetings, and helping analyze data. Sociology;#Pediatrics</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Anna Bianchi-Smiraglia</p> <p><i>Dept. of Cell Stress Biology</i></p> <p>www.roswellpark.org/Anna-Bianchi-Smiraglia</p> <p>Mentoring style- <i>Open door policy for any question, suggestion, issue, etc. Ready to lend a hand when needed but not constantly over people shoulder. Promoting independence and critical thinking</i></p> <p>Expectations of summer student- <i>To be curious about science and the work being performed. To be responsible and committed. To work with integrity and as a team player.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology</p>	<p>GTP metabolism in breast cancer</p> <p>Our lab research focuses on understanding how a basic metabolism to produce GTP (one of the building block of the nucleic acids) is distorted by tumor cells to promote invasion and metastasis. We are especially interested in the role of the GTP biosynthesis rate-limiting enzyme IMPDH2 as a promoter of tumor progression. We have created several mutants of IMPDH2 (catalytic inactive, tagged to different subcellular compartments, phosphomutants, etc) and we will perform an array of molecular biology experiments to characterize the effects of such manipulations in term of cytoskeleton remodeling, invasive capability and signaling. Western blot, qRT-PCR and immunofluorescence imaging are some of the techniques that will be employed to answer our questions.</p> <p>Project phase: Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis</p>
<p>Subhamoy Dasgupta</p> <p><i>Dept. of Cell Stress Biology</i></p> <p>www.roswellpark.org/Subhamoy-Dasgupta</p> <p>Mentoring style- <i>Provide trainees with necessary tools, guidance, support, and feedback to make the internship successful.</i></p> <p>Expectations of summer student-</p> <ol style="list-style-type: none"> 1. Learn cancer biology 2. Explore opportunities to better understand the molecular complexities of the disease. 3. Perform experiments to fill the gap-in-knowledge. 	<p>Scientific Research</p> <p>Cancer genetics; Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Tumor immunology & immunotherapy</p>	<p>Metabolic Control of Tumor Progression and Metastasis</p> <p>Metabolic reprogramming is an essential hallmark of tumor progression and metastasis. Cancer cells use altered metabolic pathways to sustain rapid growth and to overcome enormous stress encountered in tumor microenvironment. Tumor cells constantly alter their metabolic state in response to oncogenic stimuli, nutrient availability, and interaction with immune cells however the precise regulation that precedes the metabolic alteration is poorly understood. Our lab uses state-of-art facilities such as metabolomics, proteomics, and genomics along with molecular biology techniques to investigate the crosstalk between metabolic signaling and transcriptional networks. Multiple animal model systems including genetically engineered mouse models (GEMMs), patient-derived xenograft (PDX), and syngeneic tumor models are used to investigate metabolic adaptations that tumor progression and metastasis. Projects: (1) Metabolic adaptations driving castration resistant prostate cancer, (2) Oncogenic drivers of bone metastatic prostate cancer, (3) Mechanisms of breast tumor recurrence and metastasis.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Gal Shafirstein</p> <p><i>Dept. of Cell Stress Biology</i></p> <p>www.roswellpark.org/Gal-Shafirstein</p> <p>Mentoring style- <i>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.</i></p> <p>Expectations of summer student- <i>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.</i></p>	<p>Scientific Research</p> <p>Photodynamic Therapy; Cancer biophysics</p>	<p>Treatment Planning and Light Dosimetry in Photodynamic Therapy (PDT)</p> <p>My research team is focused on the development and implementation of treatment planning and light dosimetry in PDT. My group includes, 2 engineers, 2 research scholars and 3 pre-doctoral student. We do preclinical and clinical studies, and investigate combination therapies.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>
<p>Amanda Quisenberry</p> <p><i>Dept. of Health Behavior</i></p> <p>www.roswellpark.org/Amanda-Quisenberry</p> <p>Mentoring style- <i>I am an interactive, involved mentor with a desire to share my work and motivate young investigators.</i></p> <p>Expectations of summer student- <i>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.</i></p>	<p>Scientific Research</p> <p>Cancer prevention and epidemiology</p>	<p>Tobacco Product Consumption under Hypothetical Flavor Policy Environments Using Behavioral Economic and Eye Tracking Methods</p> <p>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.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>John Ebos</p> <p><i>Dept. of Medicine</i></p> <p>www.roswellpark.org/John-Ebos</p> <p>Mentoring style- <i>As a group we come to the lab everyday and push ourselves to be as conceptually innovative and creative as possible, we see no limits to how much we can invest, know, read, or test experimentally. As a mentor I try to bring out your best in these areas and work on things that are needed in any profession, such as writing, speaking, and problem solving.</i></p> <p>Expectations of summer student- <i>Current lab members include late-stage PhD students who are exceptionally committed to their projects and represent model examples of work ethic and intellectual investment, so there is an excellent opportunity for strong mentorship by committed teachers. An ideal summer student is someone who can give their best effort to learn from these examples, and match the enthusiasm in the lab.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Tumor immunology & immunotherapy; Surgical Oncology; Cancer genetics; Medical Oncology; Cancer bioinformatics; Cancer biostatistics</p>	<p>Resistance and metastasis following tumor microenvironment inhibition</p> <p>Student will use clinically relevant models of spontaneous metastatic disease to study resistance to antiangiogenic (VEGF pathway) and immunecheckpoint (PD-1 pathway) inhibitors. Student will be mentored by experienced trainees and learn several novel techniques, including those bench-related</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Marc Ernstoff</p> <p><i>Dept. of Medicine</i></p> <p>www.roswellpark.org/Marc-Ernstoff</p> <p>Mentoring style- <i>Set the stage and provide direction</i></p> <p>Expectations of summer student- <i>to design and carry out a preliminary study and write a paper</i></p>	<p>Scientific Research Clinical Research</p> <p>Tumor immunology & immunotherapy</p>	<p>Exosome modulation of immune regulation Exosomes and soluble factors such as growth factors, cytokines and chemokines have been implicated in the immunosuppressive conditions of the tumor microenvironment. Determining the contribution of each requires stringent control of purity of the isolated analytes. To date, little attention has been focused on the potential of exosome isolation methods to co-enrich for soluble factors. The current study applied conventional isolation methods including ultracentrifugation, precipitation and size exclusion chromatography to prepare exosomes from human melanoma cell culture (888-mel, 2183-Her4) supernatant. The resultant preparations (HMEX) were analyzed by multiplex bead array analysis for cytokine profiles, by electron microscopy and nanotracking analysis for exosome size distribution and concentration while their immunosuppressive potential was assessed by the ability to inhibit IFN-γ and TNF-α production of a patient derived, tumor-antigen (NY-ESO-1) specific cytotoxic CD8+ T cell clone in response to exposure to its cognate antigen. We demonstrated that the amount and repertoire of soluble factors in the resultant exosome preparation is dependent on the isolation method used. A combination of ultrafiltration and size exclusion chromatography yielded up to 58-fold more exosomes than ultracentrifugation with 1 to 2 orders of reduced magnitude in concentrations of co-purified soluble factors. The exosomes with increased purity present 4-fold more PD-L1 expressing exosomes than conventional ultracentrifugation method (UC), and retained their immunosuppressive features. The combination of anti-PD-L1 and anti-IL10 antibodies partially reverse this suppression. Thus, in the context of immunomodulatory effects of exosomes, the isolation method and resulting co-isolated soluble factors should be carefully considered. The data confirm recently published expression of PD-L1 on HMEX and that their immunosuppressive effects are independent of contaminating soluble factors but may involve an interaction between the PD-L1 and IL10 pathways.</p> <p>modification of immune response in melanoma patients clinical trials using immune modulators to treat patients with metastatic melanoma</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Ethan Abel</p> <p><i>Dept. of Molecular and Cellular Biology</i></p> <p>www.roswellpark.org/Ethan-Abel</p> <p>Mentoring style- <i>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.</i></p> <p>Expectations of summer student- <i>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, and with guidance/supervision carry out a set of pre-designed experiments in a reproducible manner so that some conclusions regarding the questions behind the experiments can be confidently made. 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. I expect all trainees to be excited, hardworking, careful, honest, and mutually respectful so as to promote and maintain a collaborative work environment that conducts high-quality science at all times.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics</p>	<p>Epigenetic targeting of pancreatic cancer stem cells</p> <p>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.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Nitai Hait</p> <p>Dept. of Molecular and Cellular Biology</p> <p>www.roswellpark.org/Nitai-Hait</p> <p>Mentoring style- <i>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.</i></p> <p>Expectations of summer student- <i>During the internship, the student should have the motivation to learn, gathering knowledge, and hands-on experiences.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics</p>	<p>Mechanisms by which sphingolipid mediators impact tumor progression and metastasis</p> <p>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. Significant projects: i) to determine the role of S1P as a cofactor in regulating master transcription factors (HIFs, STATs, NF-kB) functions in cancer; 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 a variety of 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.</p> <p>Project phase: Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper</p>
<p>Dimitre Kunnev</p> <p>Dept. of Molecular and Cellular Biology</p> <p>www.roswellpark.org/Dimitre-Kunnev</p> <p>Mentoring style- <i>Formulating the scientific goals, let the student read and study, I like provocative scientific thinking, demonstrate how the experimental procedure works and allow student to perform the experiments. I like early development of presentations and figures.</i></p> <p>Expectations of summer student- <i>Student should be: eager to learn, responsible to execute experiments, asking lots of questions.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Cancer genetics</p>	<p>DNA replication as cell cycle regulation in cancer cells</p> <p>We are seeking to define the mechanisms which determinate the proper DNA replication machinery assembly. This study would be investigated from different angles in normal and cancer cells. Major goal of our research is to utilize this knowledge for specific treatment of cancer.</p> <p>Project phase: Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Mukund Seshadri</p> <p><i>Dept. of Oral Medicine/Head and Neck Surgery</i></p> <p>www.roswellpark.org/Mukund-Seshadri</p> <p>Mentoring style- TBD</p> <p>Expectations of summer student- TBD</p>	<p>Scientific Research Clinical Research</p> <p>Cancer biophysics; Cancer pharmacology and therapeutics; Radiation Oncology; Cancer experimental diagnostics; Cancer prevention and epidemiology</p>	<p>Multi-modal Imaging of Cancer</p> <p>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.</p> <p>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.</p> <p>Project phase: TBD</p>
<p>Dhyan Chandra</p> <p><i>Dept. of Pharmacology and Therapeutics</i></p> <p>www.roswellpark.org/Dhyan-Chandra</p> <p>Mentoring style- Provide opportunities to brainstorm ideas. Encourage student to ask questions. Guide student to develop collaborative skills to understand scientific research project.</p> <p>Expectations of summer student- I expect summer student to learn new ideas and approaches. I expect them to brainstorm these ideas/approaches during lab meeting or discussion. These activities will help student developing independent thinking in scientific research.</p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Urology</p>	<p>Mitochondrial Regulation of Cell Death and Resistance in Cancer</p> <p>The main focus of our research is to understand the molecular basis of therapy resistance in multiple cancer types including in prostate, breast, 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 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.</p> <p>Project phase: Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Xiang Ling</p> <p><i>Dept. of Pharmacology and Therapeutics</i></p> <p>www.roswellpark.org/Xiang-Ling</p> <p>Mentoring style- sharing knowledge and skills; overseeing student's work.</p> <p>Expectations of summer student- be a responsible student</p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics</p>	<p>Anticancer drug evaluation and mechanism study</p> <p>Our current research focuses on: the molecular mechanisms of action of FL118, the DMPK profile and potential side effects induced by FL118 treatment. In addition, survivin isoforms perform different functions in distinct subcellular compartments. Type of work involved: cell culture, cell viability assay, western blot, qPCR and animal experiment.</p> <p>Project phase: Design- early stage development of experimental components/methodologies with a concentration on techniques</p>
<p>Xinjiang Wang</p> <p><i>Dept. of Pharmacology and Therapeutics</i></p> <p>www.roswellpark.org/Xinjiang-Wang</p> <p>Mentoring style- educator and challenger for problem-solving capabilities</p> <p>Expectations of summer student- sincere interest in cancer science, strictly following instructions, actively asking questions</p>	<p>Scientific Research</p> <p>Cancer genetics; Cancer pharmacology and therapeutics; Cancer molecular and cellular biology</p>	<p>Development of Novel Targeted Therapies for Leukemia Treatment</p> <p>The goal of this study is to evaluate the antitumor effect of newly identified small molecule inhibitors for Mdm2-MdmX E3 ubiquitin ligase in leukemia/lymphoma cells. Specifically, we are trying to understand how these compounds kill drug-resistant leukemia/lymphoma cells and whether they can be used as novel combination therapies for melanoma and pancreatic cancer to overcome their resistance to current therapies. The summer students will be assigned to one of the current projects under supervision of experience postdocs or research associate. The projects will involve techniques of protein analysis such as Western blotting and molecular biology methods such as DNA cloning and gene expression and analysis in cancer cells, proliferation assays and cell death assays of drug-treated cancer cells.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Anna Woloszynska-Read</p> <p><i>Dept. of Pharmacology and Therapeutics</i></p> <p>www.roswellpark.org/Anna-Woloszynska-Read</p> <p>CSTEP Peer-to-Peer Program? Yes</p> <p>Mentoring style- <i>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.</i></p> <p>Expectations of summer student- <i>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.</i></p>	<p>Scientific Research</p> <p>Cancer genetics; Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Urology;cancer epigenetics</p>	<p>Genetic and epigenetic regulation in genitourinary cancers</p> <p>High grade and high stage muscle-invasive bladder cancer (MIBC) is one of the most aggressive human cancers. Less than 20% of patients with advanced MIBC survive past 5 years due to lack of curative treatment. Thus, investigating the mechanisms of bladder cancer invasion is of paramount importance. Numerous factors are involved in recurrence, progression, and patient survival given bladder cancer's diverse biological and functional characteristics. Due to the heterogeneous nature of BC, pathologically similar tumors may behave differently, making progression to MIBC highly unpredictable. The unpredictable aggressiveness of high-risk non-muscle invasive (NMI) bladder tumors often leads to over-treatment with radical cystectomy, which in turn is associated with significant morbidity. Yet few options remain, since misrecognition and under-treatment of potentially aggressive, life-threatening NMI bladder tumors most often results in death. To date, the molecular alterations that transform NMI bladder cancer into MIBC have not been identified. MIBC patients with refractory disease have severely limited treatment options, making development of improved prognostic markers and treatment strategies a very high priority for this group of patients. The purpose of this project is to investigate the role of STAG2 in bladder cancer. The hypothesis guiding this research is that STAG2 in muscle-invasive bladder cancer has a predictive value and acts as an oncogenic transcriptional factor regulating genes involved in tumor cell invasion. To delineate the mechanism by which STAG2 enhances invasion in muscle-invasive bladder cancer cells our laboratory is working to establish the functional role of novel STAG2 target genes in STAG2-dependent regulation of invasion in muscle-invasive bladder cancer cells and identify prognostic significance of STAG2 alone or in combination with its downstream targets in bladder cancer progression.</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Anurag Singh</p> <p><i>Dept. of Radiation Medicine</i></p> <p>www.roswellpark.org/Anurag-Singh</p> <p>Mentoring style- Close oversight with concurrent exposure to the clinic</p> <p>Expectations of summer student- 40 hours of work per week including 2 days/week in clinic</p>	<p>Clinical Research</p> <p>Radiation Oncology; Cancer pharmacology and therapeutics</p>	<p>Clinical Research Project in Radiation Medicine</p> <p>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.</p> <p>Projects will vary for the summer program based on availability and student interest, past projects included:</p> <p>The Effect of Time between Diagnosis and Initiation of Treatment on Outcomes in Patients with Head and Neck Squamous Cell Carcinoma. Accepted Oral Oncology July 2019.</p> <p>Association of Timing of Adjuvant Therapy and Survival in Resected Stage I-II Pancreatic Cancer. Accepted JAMA Network Open. June 2019</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>
<p>Chukwumere Nwogu</p> <p><i>Dept. of Thoracic Surgery</i></p> <p>www.roswellpark.org/Chukwumere-Nwogu</p> <p>Mentoring style- My mentorship style involves coaching with gradually increasing responsibility. This will involve study, writing, presenting locally and at a national meeting.</p> <p>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.</p>	<p>Clinical Research</p> <p>Surgical Oncology; Other (please specify); Thoracic Surgery</p>	<p>Minimally Invasive Thoracic Surgery Clinical Outcomes</p> <p>This Internship offers the opportunity to participate in various projects related to minimally invasive (Robotic and VATS) thoracic surgical oncology, multidisciplinary thoracic oncology conferences and/or photodynamic therapy of lung tumors in mice. Obs</p> <p>Project phase: Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Khurshid Guru</p> <p><i>Dept. of Urology</i></p> <p>www.roswellpark.org/ Khurshid-Guru</p> <p>CSTEP Peer-to-Peer Program?</p> <p>Mentoring style- <i>Dr. Guru will meet with you formally twice over the course of the summer to discuss your projects and career goals. You will meet informally with Dr. Guru when he comes to the ATLAS offices throughout the summer. The ATLAS Assistant Director will manage your time, attendance, and program access while at Roswell Park and you will report directly to them. You will work closely on a daily basis with the Clinical Fellow and Project Coordinators to develop your project and they will be your clinical resources. All members of ATLAS will be available for career advice.</i></p> <p>Expectations of summer student- <i>We expect all summer students to truly become part of the ATLAS team! The most successful students show a keen interest in the research we are doing and go on to write their own manuscripts and submit abstracts that can then be presented at the conference of their choice. We eat lunch as a team every day and look for students who are willing to socialize and get to know our team.</i></p>	<p>Scientific Research Clinical Research</p> <p>Urology; Medical Oncology; Surgical Oncology; Surgical training, human factors engineering, etc.</p>	<p>ATLAS Internship Specialties: 1) Medicine 2) Engineering 3) Medical Illustration 4) Data Managing Past Intern Accomplishments: 1. Published as co-authors of manuscripts, posters, and presentations in prestigious journals and conferences such as the Journal of Urology, BJUI, IJU, AUA, ERUS, EAU, etc. 2. Develop medical technologies and apply and achieve patents for their inventions 3. Invited to attend and present projects at national conferences 4. Develop patient education tools (Android application) 5. Become a co-consenter in clinical trials where they are able to interact with patients in RPCI clinic 6. Become wet-lab certified to bed-side assist in robotic surgery labs 7. Log hours of OR observation and video classification of real cases 8. Complete the Introduction to Robotic Surgery and Introduction to Laparoscopic Surgery Curriculum (Certification) 9. Learn how to navigate patient records on multiple web-based platforms 10. Learn how to maintain, develop, and manipulate databases for research purposes</p> <p>ATLAS Internship Specialties: 1) Medicine 2) Engineering 3) Medical Illustration 4) Data Managing Past Intern Accomplishments: 1. Published as co-authors of manuscripts, posters, and presentations in prestigious journals and conferences such as the Journal of Urol</p> <p>Project phase: Elements of all three (Design, Discovery, Validation)</p>

Internship Directory: Roswell Park Summer Research Experience Program in Oncology (Medical Students)

Mentor	Research Areas	Project description
<p>Yue Wu</p> <p><i>Dept. of Urology</i></p> <p>www.roswellpark.org/Yue-Wu</p> <p>Mentoring style- <i>i would like to mentor through active discussions, and would like the student to be able to bring their own questions to the discussions.</i></p> <p>Expectations of summer student- <i>A summer student would be an active thinker, and has basic skills to manage PowerPoint and Excel.</i></p>	<p>Scientific Research</p> <p>Cancer molecular and cellular biology; Cancer molecular epidemiology; Cancer pharmacology and therapeutics; Cancer prevention and epidemiology; Cancer bioinformatics; Cancer genetics; Urology; Medical Oncology</p>	<p>Understanding Progression of Prostate Cancer to Castration Re-Current Disease</p> <p>My research interest is in microenvironment of cancer - how cancer cells, endothelial cells and stromal cells interact with each other, and how the interactions affect cancer cell growth. Prostate cancer models are used primarily in my lab. The ultimate goal is to delineate mechanisms that drive progression of androgen-stimulated prostate cancer to castration-resistant prostate cancer, and to identify novel modalities to prevent or treat castration-resistant prostate cancer.</p> <p>Project phase: Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis</p>