2024 Mentor Directory: Summer Research Experience Program in Oncology for Medical Students

Mentor	Department	Project	Pg.
Ethan Abel	Molecular and Cellular Biology	Epigenetic targeting of pancreatic cancer stem cells	2
Nataliya Buxbaum	Pediatric Oncology	• Magnetic resonance imaging of cellular immunotherapy • Deuterium magnetic resonance imaging (dMRI) of brain cancer	3
Dhyan Chandra	Pharmacology and Therapeutics	Mitochondrial Regulation of Cell Death and Resistance in Cancer	3
Gokul Das	Pharmacology and Therapeutics	Mechanisms by which Hormone Receptors and Tumor Suppressors Impact Cancer	4
John Ebos	Cancer Biology	Resistance and metastasis following tumor microenvironment inhibition	5
Irwin Gelman	Cancer Genetics, Genomics and Development	The role of AKT isoform-specific substrates in promoting prostate cancer progression	5
Khurshid Guru	Urology	ATLAS Internship	6
Kent Nastiuk	Cancer Genetics and Genomics and Development	Immune suppression in prostate tumor, muscle loss side-effect of androgen deprivation therapy for prostate cancer	7
Chukwumere Nwogu	Thoracic Surgery	Technology Enhanced Multidisciplinary Oncology Care	8
Gal Shafirstein	Cell Stress Biology	Image-Guided Treatment Planning and Dosimetry in Photodynamic Therapy with Targeted, Radiotherapy and Immunotherapy	8
Anurag Singh	Radiation Medicine	Clinical Research Project in Radiation Medicine	9
Li Tang	Cancer Prevention and Population Sciences	Gene, Diet, and their interactions contributing to cancer characteristics and prognostic outcomes	9
Karen Yeary	Cancer Prevention and Population Sciences	Two weight loss strategies for prostate cancer patients on active surveillance	10
Eunice Wang	Medicine	Novel Biological Therapies for Acute Leukemia	10
Jianmin Zhang	Cancer Genetics and Genomics and Development	Elucidating the mechanism of breast tumor cell plasticity and tumor metastasis	11

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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.* **Expectations of summer student-** *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, honest, and mutually respectful so as to promote and maintain a*	**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)

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collaborative work environment that conducts high-quality science at all times.		
Nataliya Buxbaum *Dept. of* ***Pediatric Oncology*** **www.roswellpark.org/Nataliya-Buxbaum** **Mentoring style-** *Encouraging: I encourage mentees to share in the goals of the study/lab team and be interested in the rationale of the research we're conducting. I enjoy helping students navigate their careers, helping them get to the next step and connecting them with other mentors and opportunities.* **Expectations of summer student-** *Enthusiasm, willingness to learn, professionalism. I encourage students to be pro-active, ask questions, work as part of the team.*	**Scientific Research** **Clinical Research** Cancer experimental diagnostics; Tumor immunology & immunotherapy; Pediatrics	**Magnetic resonance imaging of cellular immunotherapy** Children with sarcomas need treatments that work. Our current treatments cure only 1 in 4 kids with sarcomas. Using the immune system to fight cancer (immunotherapy) is a strategy that has worked well for blood cancers and is now being developed for sarcomas. Our team has engineered an immunotherapy for pediatric sarcomas by changing the patient's immune cells to recognize and eliminate tumors. While our therapy has great potential, it does not work for all patients because sometimes the immune cells do not make it into the tumor or they do not work well once they are there because the tumor suppresses the immune cells. To develop better immunotherapies we need better tools. We need to track the immune cells in the patient's body once they are injected into the blood stream. We need to see the immune cells traveling to the cancer tissue in the patient and to see how well they work once inside the tumor. We are developing a non-radioactive safe approach to visualize sarcoma-fighting immune cells by magnetic resonance imaging (MRI). MRI is safely used to diagnose sarcomas already. By combining MRI with cell labels/tracers that are visible to the MRI we are planning to see cancer-fighting immune cells in action, i.e., their location and their function. **Deuterium magnetic resonance imaging (dMRI) of brain cancer** Patients with cancer receive radiation from imaging performed for diagnosis, measuring treatment responses, and to make sure that the cancer Patients with cancer receive radiation from imaging performed for diagnosis, measuring treatment responses, and to **Project phase:** Elements of all three (Design, Discovery, Validation)
Dhyan Chandra *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Dhyan-Chandra**	**Scientific Research** Cancer molecular and cellular biology;Cancer	**Mitochondrial Regulation of Cell Death and Resistance in Cancer** The main focus of our research is to define the role of mitochondrial biology in cancer and understand the molecular basis of therapeutic resistance in multiple types of cancer including in prostate, pancreatic, breast, and colon cancers. We are working on several interconnected and complementary research projects. The first project defines the role of

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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.*	pharmacology and therapeutics; Urology	mitochondrial unfolded protein response in cancer progression and development of therapeutic resistance in cancer patients. The second project delineates how mitochondria-mediated cell death signaling is defective in cancer cells and cancer stem cells. The third project characterizes the role of mitochondria in cancer health disparities among Americans. We also investigating the role of mitochondrial dysfunction in age-related neurodegenerative diseases and drug abuse. Our research suggests that deregulation of protein complexes contributes to tumor progression and therapeutic resistance in cancer. We use multiple biochemical, genetic, cellular, patient-derived cancer models, mouse models of cancer, clinical, and molecular approaches to identify and characterize protein complexes in subcellular compartments including in mitochondria. We envision that detailed understanding of protein complexes will lay a foundation for targeting mitochondria, cell death, and survival machineries for better therapeutic outcomes in cancer patients. Our ultimate goals are to understand the mitochondrial biology and identify novel targets for prevention and treatment of multiple types of cancer as well as other age-related diseases. **Project phase:** Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis
Gokul Das *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Gokul-Das** **Mentoring style-** *I motivate the students to think. Myself and senior people in the laboratory will discuss the project and guide you through the experiments on the bench. Students are encouraged to present their experimental data (whether the experiment succeeds or fail at times) at the weekly lab meetings. The lab meetings are semi-formal with all*	**Scientific Research** **Clinical Research** Cancer genetics;Cancer molecular and cellular biology;Cancer pharmacology and therapeutics	**Mechanisms by which Hormone Receptors and Tumor Suppressors Impact Cancer** The Research Internship will involve various cellular and molecular experiments in multiple breast cancer cell models to probe tumor suppressor activities and mechanisms of drug resistance. The main focus will be on interaction between estrogen receptor and p53 signaling in breast cancer. The overall goal of research in my laboratory is to discover novel therapeutically actionable cellular targets **Novel therapeutic strategies for triple negative breast cancer** The Research Internship will involve various cellular and molecular experiments in multiple breast cancer cell models to probe tumor suppressor activities and mechanisms of drug resistance. The main focus will be on interaction between estrogen receptor **Project phase:** Elements of all three (Design, Discovery, Validation)

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members participating in open discussions and brainstorming. **Expectations of summer student-** *The student should be highly motivated and inquisitive and be willing to read research publications relevant to the topic of research. The student should attend the weekly laboratory meeting. The student should maintain detailed records of the laboratory experiments on a daily basis.*		
John Ebos *Dept. of* ***Cancer Biology*** **www.roswellpark.org/John-Ebos** **Mentoring style-** *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.* **Expectations of summer student-** *An ideal summer student is someone who can give their best effort, commit to learning from experienced mentors, and match the enthusiasm in the lab.*	**Scientific Research** Cancer molecular and cellular biology;Cancer pharmacology and therapeutics; Tumor immunology & immunotherapy; Surgical Oncology;Cancer genetics;Medical Oncology;Cancer bioinformatics; Cancer biostatistics	**Resistance and metastasis following tumor microenvironment inhibition** 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 **Project phase:** Elements of all three (Design, Discovery, Validation)
Irwin Gelman *Dept. of* ***Cancer Genetics and Genomics*** **www.roswellpark.org/Irwin-Gelman**	**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, or Src regulate parameters of disease aggressiveness in vitro. This will involve cell culture, transfection, protein staining,

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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.*		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
Khurshid Guru *Dept. of* ***Urology*** **www.roswellpark.org/Khurshid-Guru** **Mentoring style-** *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.* **Expectations of summer student-** *We expect all summer students to truly become part of the ATLAS team! The most successful students show a keen*	**Scientific Research Clinical Research** Urology;Medical Oncology;Surgical Oncology;Surgical training, human factors engineering, etc.	**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 attended 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 **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 **Project phase:** Elements of all three (Design, Discovery, Validation)

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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.		
Kent Nastiuk *Dept. of* ***Cancer Genetics and Genomics, Urology*** **www.roswellpark.org/Kent-Nastiuk** **Mentoring style-** *My goal is to give the trainee experience as an independent researcher. I think this requires working collaboratively to tackle a significant problem, but given 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	**Immune suppression in prostate tumor, muscle loss side-effect of androgen deprivation therapy for prostate cancer** Androgen signaling regulates growth and apoptosis of prostate cancer (PC), so androgen deprivation therapy (ADT) is employed to control PC, but also causes frailty. Therefore we study the mechanism of ADT-induced muscle loss. Immune suppression contributes to PC development and resistance to ADT, so we are testing therapies in mice. 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
Chukwumere Nwogu	**Clinical Research**	**Technology Enhanced Multidisciplinary Oncology Care**

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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.	Surgical Oncology; Thoracic Surgery	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
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.*	**Scientific Research** Photodynamic Therapy;Cancer biophysics; Surgical Oncology; Radiation Oncology;Medical Oncology	**Image-Guided Treatment Planning and Dosimetry in Photodynamic Therapy with Targeted, Radiotherapy and Immunotherapy** My research focuses on advancing the utilization of photodynamic therapy and chemophototherapy through novel computer modelling and the development of medical devices. Our expertise is in translating preclinical findings into clinical trials. Our novel technologies are currently being tested in four clinical trials, and we are in the process of supporting three more trials. We aim to improve treatment outcomes and quality of life in patients with advanced cancer in the lung and airway, head and neck, liver, breast, and colorectal cancer. **Project phase:** Elements of all three (Design, Discovery, Validation)

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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.*		
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)
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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Karen Yeary *Dept. of* ***Cancer Prevention and Population Sciences*** **www.roswellpark.org/Karen-Yeary** **Mentoring style-** *Not a micro-manager and more hands-off; I am more than willing to give direction if mentee asks.* **Expectations of summer student-** *To be a productive member of our research team. To meet agreed upon tasks and goals. To be willing to ask questions and take initiative in learning.*	**Clinical Research** Cancer prevention and epidemiology	**Two weight loss strategies for prostate cancer patients on active surveillance** We will test two different types of weight loss strategies on prostate cancer patients on active surveillance. One weight loss strategy will be a gold-standard behavioral weight loss intervention, whereas the other will be an intermittent fasting interven **Project phase:** Elements of all three (Design, Discovery, Validation)
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** Novel therapeutics for acute myeloid leukemia Our lab investigates novel therapeutics for the treatment of acute myeloid leukemia (AML). We conduct translational pre-clinical research on human AML cell lines and patient bone marrow samples in vitro followed by in vivo studies of human xenografts in mice. We have two main areas of ongoing research and are accepting one student on each project. 1) PARP inhibition in AML The protein PARP is involved in the detection and repair of DNA damage. Blocking PARP prevents cells from repairing damaged DNA and induces cell death. As many chemotherapies cause DNA damage, we hypothesize that combining PARP inhibitors with currently used chemotherapies will increase the efficacy of these drugs against leukemia cells. Key publication for more information: https://pubmed.ncbi.nlm.nih.gov/32482307/ 2) Autophagy and Hypoxia in AML AML resides in the bone marrow which is characterized by hypoxic (low oxygen) conditions that are known to shelter leukemia cells from chemotherapy. Autophagy (auto=self, phagy=eating) is recycling process in which cells degrade their components under stressful conditions, such as hypoxia. We hypothesize that AML cells rely on autophagy to survive under hypoxia and therefore inhibiting autophagy will be able to eliminate leukemia cells in the bone marrow where currently used drugs cannot reach. Key publication for more information: https://pubmed.ncbi.nlm.nih.gov/33877295/

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		Motivated students will learn the basics of experimental design, laboratory calculations, sterile technique, and cell culture. Students will also learn many of the following in vitro & in vivo techniques based on their interest and project chosen: cell cycle, proliferation & apoptosis assays, western blotting, flow cytometry, colony formation assays, confocal microscopy, proper mouse handling, inoculation and treatment of human leukemia xenografts by injection, oral, and intravenous routes, and imaging to monitor tumor burden. **Project phase:** Elements of all three (Design, Discovery, Validation)
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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