2022 Mentor Directory: Summer Research Experience Program in Oncology for PA 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**- *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 collaborative work environment that conducts high-quality science at all times.*

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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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Gyorgy Paragh *Dept. of* ***Dermatology & Cell Stress Biology*** **www.roswellpark.org/Gyorgy-Paragh** ***CSTEP Peer-to-Peer Program?*** **Yes** **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-** **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:**

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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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Pamela Sung *Dept. of* ***Pharmacology and Therapeutics*** **www.roswellpark.org/Pamela-Sung** ***CSTEP Peer-to-Peer Program?*** **Yes** **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

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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)