

## Mentor Directory for 2024 Howard University/Roswell Park Cancer Scholars Program

| 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                                                                | 3  |
| Dhyan Chandra    | Pharmacology and Therapeutics             | Mitochondrial Regulation of Cell Death and Resistance in Cancer                                                     | 3  |
| Maciej Goniewicz | Cancer Prevention and Population Sciences | Safety of electronic cigarettes                                                                                     | 4  |
| Fengzhi Li       | Pharmacology and Therapeutics             | Study the novel anticancer drug FL118 mechanism of action in pancreatic cancer and/or colorectal cancer             | 5  |
| Gal Shafirstein  | Cell Stress Biology                       | Image-Guided Treatment Planning and Dosimetry in Photodynamic Therapy with Targeted, Radiotherapy and Immunotherapy | 5  |
| Anurag Singh     | Radiation Medicine                        | Clinical Research Project in Radiation Medicine                                                                     | 6  |
| Jianmin Zhang    | Cancer Genetics, Genomics and Development | Elucidating the mechanism of breast tumor cell plasticity and tumor metastasis                                      | 6  |

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| Mentor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Research Areas                                                                                                       | Project description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>Ethan Abel</b></p> <p>Dept. of <b>Molecular and Cellular Biology</b></p> <p><a href="http://www.roswellpark.org/Ethan-Abel">www.roswellpark.org/Ethan-Abel</a></p> <p><b>Mentoring style-</b> <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><b>Expectations of summer student-</b> <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 (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</i></p> | <p><b>Scientific Research</b></p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics</p> | <p><b>Epigenetic targeting of pancreatic cancer stem cells</b></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><b>Project phase:</b> Elements of all three (Design, Discovery, Validation)</p> |

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| <p><i>so as to promote and maintain a collaborative work environment that conducts high-quality science at all times.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Nataliya Buxbaum</b></p> <p>Dept. of <b>Pediatric Oncology</b></p> <p><a href="http://www.roswellpark.org/Nataliya-Buxbaum">www.roswellpark.org/Nataliya-Buxbaum</a></p> <p><b>Mentoring style-</b> <i>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.</i></p> <p><b>Expectations of summer student-</b> <i>Enthusiasm, willingness to learn, professionalism. I encourage students to be pro-active, ask questions, work as part of the team.</i></p> | <p><b>Scientific Research<br/>Clinical Research</b></p> <p>Cancer experimental diagnostics;Tumor immunology &amp; immunotherapy;Pediatrics</p> | <p><b>Magnetic resonance imaging of cellular immunotherapy</b><br/>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.</p> <p><b>Deuterium magnetic resonance imaging (dMRI) of brain cancer</b><br/>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</p> <p><b>Project phase:</b> Elements of all three (Design, Discovery, Validation)</p> |
| <p><b>Dhyan Chandra</b></p> <p>Dept. of <b>Pharmacology and Therapeutics</b></p> <p><a href="http://www.roswellpark.org/Dhyan-Chandra">www.roswellpark.org/Dhyan-Chandra</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>Scientific Research</b></p> <p>Cancer molecular and cellular biology;Cancer</p>                                                          | <p><b>Mitochondrial Regulation of Cell Death and Resistance in Cancer</b><br/>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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| <p><b>Mentoring style-</b> <i>Provide opportunities to brainstorm ideas. Encourage student to ask questions. Guide student to develop collaborative skills to understand scientific research project.</i></p> <p><b>Expectations of summer student-</b> <i>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.</i></p>                                       | <p>pharmacology and therapeutics; Urology</p>                                              | <p>research projects. The first project defines the role of 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.</p> <p><b>Project phase:</b> Discovery- initial probing of scientific problem using established methods with a concentration on techniques, data analysis</p> |
| <p><b>Maciej Goniewicz</b></p> <p><i>Dept. of Cancer Prevention and Population Sciences</i></p> <p><a href="http://www.roswellpark.org/Maciej-Goniewicz">www.roswellpark.org/Maciej-Goniewicz</a></p> <p><b>Mentoring style-</b> <i>Meetings in person at least once a week to discuss progress and challenges in experiments. Weekly presentations to my lab team. Meetings in person to discuss conference submission.</i></p> <p><b>Expectations of summer student-</b> <i>Conduct a pilot experiments. Collect the preliminary data. Prepare and submit</i></p> | <p><b>Scientific Research</b></p> <p>Cancer prevention and epidemiology; Public Health</p> | <p><b>Safety of electronic cigarettes</b></p> <p>Research projects are focused on new nicotine-containing products and alternative forms of tobacco. We examine safety and efficacy of electronic nicotine delivery devices, commonly called e-cigarettes. These studies include the laboratory evaluation of the products, pharmacological and toxicological assessment, surveys among their users, and their potential application in harm reduction, cancer prevention and smoking cessation.</p> <p><b>Project phase:</b> Elements of all three (Design, Discovery, Validation)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| <p>at least one abstract for scientific conference or one manuscript for peer-reviewed journal.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Fengzhi Li</b></p> <p>Dept. of <b>Pharmacology and Therapeutics</b></p> <p><a href="http://www.roswellpark.org/Fengzhi-Li">www.roswellpark.org/Fengzhi-Li</a></p> <p><b>Mentoring style-</b> Signed the project and let the lab members help for the internship to finish the project/work. I am available to the student as well when needed.</p> <p><b>Expectations of summer student-</b> Be interested in the area we provided. Dedicated to the work signed with research interesting, and take the research work seriously.</p>                                                                                                    | <p><b>Scientific Research</b></p> <p>Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Anticancer drug development and mechanistic studies</p> | <p><b>Study the novel anticancer drug FL118 mechanism of action in pancreatic cancer and/or colorectal cancer</b></p> <p>The student will be trained for some basic cancer research technology (e.g., cell culture, western blots, etc.) for studying our novel anticancer drug FL118's mechanism of action (MOA). The goal is for the student to be familiar with laboratory anticancer drug research and development.</p> <p><b>Project phase:</b> Validation- confirming previous data/results with a concentration on techniques, data interpretation and science reporting; potential for contributing to a scientific paper</p>                                                                                                                                                       |
| <p><b>Gal Shafirstein</b></p> <p>Dept. of <b>Cell Stress Biology</b></p> <p><a href="http://www.roswellpark.org/Gal-Shafirstein">www.roswellpark.org/Gal-Shafirstein</a></p> <p><b>Mentoring style-</b> 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.</p> <p><b>Expectations of summer student-</b> 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.</p> | <p><b>Scientific Research</b></p> <p>Photodynamic Therapy; Cancer biophysics; Surgical Oncology; Radiation Oncology; Medical Oncology</p>                                 | <p><b>Image-Guided Treatment Planning and Dosimetry in Photodynamic Therapy with Targeted, Radiotherapy and Immunotherapy</b></p> <p>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.</p> <p><b>Project phase:</b> Elements of all three (Design, Discovery, Validation)</p> |

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| <p><b>Anurag Singh</b></p> <p><i>Dept. of Radiation Medicine</i></p> <p><a href="http://www.roswellpark.org/Anurag-Singh">www.roswellpark.org/Anurag-Singh</a></p> <p><b>Mentoring style-</b> <i>Close oversight with concurrent exposure to the clinic</i></p> <p><b>Expectations of summer student-</b> <i>40 hours of work per week including 2 days/week in clinic</i></p>                                                                                                                                                                                               | <p><b>Clinical Research</b></p> <p>Radiation Oncology; Cancer pharmacology and therapeutics</p>                                                                             | <p><b>Clinical Research Project in Radiation Medicine</b></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. Past project titles t</p> <p><b>Project phase:</b> Elements of all three (Design, Discovery, Validation)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Jianmin Zhang</b></p> <p><i>Dept. of Cancer Genetics</i></p> <p><a href="http://www.roswellpark.org/Jianmin-Zhang">www.roswellpark.org/Jianmin-Zhang</a></p> <p><b>Mentoring style-</b> <i>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.</i></p> <p><b>Expectations of summer student-</b> <i>I expect a summer student self-motivated; enthusiastic on cancer research; purpose driven.</i></p> | <p><b>Scientific Research</b></p> <p>Cancer genetics; Cancer molecular and cellular biology; Cancer pharmacology and therapeutics; Tumor immunology &amp; immunotherapy</p> | <p><b>Elucidating the mechanism of breast tumor cell plasticity and tumor metastasis</b></p> <p>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.</p> <p>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 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.</p> <p>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).</p> |



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