MENTOR DIRECTORY

IMMUNOLOGY

Mentor: Joseph Barbi, PhD
Assistant Professor of Oncology

Research Interests: In order for the immune system to function properly, it must be tightly regulated. Failure to do so can inappropriately unleash the immune system's impressive destructive power. Preventing the collateral damage and autoimmune disease that can result from out-of-control immune activation are a number of safeguards including Regulatory T cells. While these are necessary for immune control, they can also oppose the mounting of robust anti-tumor immune responses, limiting the benefits of many anti-cancer therapies. My research interests focus on the factors and processes that influence Regulatory T cells and other mechanisms of immune control. My lab is exploring the regulatory cell types and processes capable of controlling the immune system with an emphasis on unappreciated factors that may enhance or inhibit their suppressive functions. By advancing our understanding of how certain environmental cues, inflammatory stresses, and metabolic factors influence the mechanisms of immune regulation, we will discover ways to fine-tune immune responses and reveal new targets for future anti-cancer immunotherapies.

Mentor: Scott Abrams, PhD
Professor of Oncology
Member Graduate Faculty, Roswell Park Graduate Division,
University at Buffalo

Research Interests: Our research interests have been devoted to understanding how the immune system achieves or fails to achieve a successful antitumor response. More specifically, our work focuses on mechanisms of tumor escape, immune suppression and immunotherapy. During the course of these studies, our laboratory has defined pivotal roles for interferon regulatory factor-8 (IRF8), a member of the IRF family of transcription factors, in tumor Immunology. Key findings showed that when IRF8 is expressed it acts as a positive regulator of tumor-cell response to certain forms of cell death, as well as a negative regulator of myeloid-derived suppressor cell (MDSC) development. MDSCs are known to be potent inhibitors of antitumor immunity and their production appears to IRF8-dependent. Thus, we have identified previously unrecognized roles for IRF8 in tumor biology. Altogether, our goals are to better understand how the neoplastic process impairs host antitumor immune responses, thereby providing new avenues for prognostic or therapeutic opportunities.

PROGRAM TRACK:

1. SOPHOMORE FALL
   APPLICATION, SELECTION AND PLACEMENT
   Identify which mentors match your interests.
   Roswell Park and Howard University faculty will place five Cancer Scholars and match them to mentors.

2. SOPHOMORE SPRING
   TELE-MENTORED DIRECTED READINGS I
   Complete Directed Readings I, II, and III courses under the tele-mentorship of Roswell Park research faculty.
   Read scientific literature relevant to the Roswell Park mentor’s field of study, including publications from their laboratory.

3. JUNIOR FALL
   TELE-MENTORED DIRECTED READINGS II
   Discuss these readings weekly for one hour via video chat with the Roswell Park faculty or graduate students and postdoctoral fellows in their labs.

3. JUNIOR SPRING
   TELE-MENTORED DIRECTED READINGS III

4. JUNIOR SUMMER
   PAID RESEARCH INTERNSHIP AT ROSWELL PARK
   Upon satisfactory completion of the Directed Readings courses:
   - Admitted into Roswell Park's summer research program.
   - Conduct your honors research project with your mentor.
   - Present a capstone scientific talk and poster on your summer research project to intern peers.

4. SENIOR YEAR
   PRESENTATION AT SCIENCE CONFERENCE AND HONORS THESIS
   Present an Honors Thesis based on your Roswell Park research.

Summer Internship Funding: You will receive a subsistence allowance of $4000 to cover your summer living expenses and lodging expenses at Canisius College dormitories for the 10 week duration of the program. Payments are made to interns on a bi-weekly basis during the summer internship period.