

FAQ for Research Associates Position for Penn Medical Students in Fan Lab

GOAL: Cancer stem cells (CSC) have recently been discovered and identified as tumor-initiating cells with unique properties including self-renewal and resistance to radio/chemo treatment. Accumulating evidence shows that CSC is crucial for the tumor progression and therapeutic resistance in malignant cancer, particularly in glioblastoma multiforme (GBM). GBM is the most common and malignant brain tumor with current median survival time of 14 month. GBM is resistance to radiation and chemotherapy, due to the prominent presence of CSC. Thus, CSC represents a novel therapeutic target for the treatment of the currently incurable GBM. However, CSC itself is refractory to routine radio/chemo treatment. We and others have recently shown a critical role of tumor-associated vascular endothelial cells in activation and maintenance of CSC's self-renewal and survival. Therefore, targeting vascular niche may offer exciting new opportunities to treat GBM. The proposed project aims at understanding the molecular mechanism underlying the interaction between endothelial cells and CSC during GBM progression. Based on this study, we will test the efficiency of the targeted therapy in mouse GBM animal models. The goal of the project is to develop a new therapy that breaks the barrier of radio/chemo resistance in GBM.

1. Does this project have established start/end dates? What is the duration of the project? Is it a long-term or short-term project? Is it full time? If the project is not full-time and can be done during medical school, how much time is required per week or month?

No specific start/end dates have been established. I prefer long term to short term. Part time, e.g., 10-20 hrs/week is acceptable, and full time during summer would also be great.

2. What are the skills the student can expect to learn? Will the student get the chance to publish in the next year or present their work at a major conference?

The students will expect to learn basic techniques and gain experience in radiation oncology, cell and molecular biology, and transgenic animal models. It is very likely the students will publish the results in a major medical journal after one-year work. I also support the students to present their work at a conference.

3. What kind of mentoring can the student expect? How often for faculty contact, resident contact, other supervision?

We are building a team including trainees with different background and expertise in basic medical science, oncology, radiology, and neurosurgery. The students will be exposed to multidisplinary environment to learn knowledge and develop expertise. We have weekly lab meeting to discuss lab business and sciences, as well as career development. In addition, the students are free to contact me anytime to discuss any scientific issues.

4. Is the research project funded? Are there funding for the student's stipend? If not, are there sources from which the student can apply?

Our projects have been funded by NIH and the department of Radiation Oncology. We will also seek additional funding sources for the students' stipend including American Cancer Society, American Association for Cancer Research, National Brain Tumor Society, Radiation Research Society, and etc.

5. Any other additional information the student should know about before applying.

This is a unique opportunity for students to learn multidisciplinary knowledge and skills in Radiation Oncology and Cancer Biology. We welcome everyone who has a passion in the pursuit of new anti-cancer therapies.