UW Carbone Cancer Center: NIH funds research that may apply to a broad range of tumors

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MADISON- The National Institutes of Health (NIH) announced today that Dr. Zachary Morris has been awarded $1.25 million as part of the NIH Director's Early Independence Award.

Morris is an assistant professor in the Department of Human Oncology (DHO) at the University of Wisconsin School of Medicine and Public Health.

The prestigious award is given to a small group of exemplary early-career scientists to help them establish their independent research careers. The five-year award will support Morris's preclinical research on combining radiation and immunotherapies to treat metastatic cancers.

Morris will use the funding to expand research on in situ tumor vaccination. This is a therapeutic approach in which a single tumor site is targeted with treatments that are intended to generate a very strong, local anti-tumor immune response. The idea is to turn a patient's own tumor into a sort of personalized anti-cancer vaccine. Similar to the immune reaction that occurs following injection of a traditional vaccine (like the flu vaccine), this initially local response may then propagate into a systemic immune response throughout the body. In the context of metastatic cancer, the hope is that following in situ tumor vaccination, a patient's immune cells will generate a potent local anti-cancer immune response and these immune cells will then circulate throughout the body to attack and eradicate other metastatic tumor sites. To achieve this, Morris and his colleagues are treating the in situ vaccine tumor site with a combination of radiation, tumor-specific antibodies, and immune-activating proteins called cytokines.

So far, Morris and his colleagues have studied the use of immunocytokines, fused antibodies and cytokines, in treating melanoma. The NIH award (DP5-OD-024576) will enable him to study antibodies and cytokines separately in order to better understand their specific roles and how they interact with the immune system. Since tumor-specific antibodies are available for most types of cancer, Morris's approach could potentially be applicable to a wide variety of tumor types. In the near future, Morris will investigate this technique for treatment of sarcoma, melanoma, neuroblastoma, breast cancer, pancreas cancer, lung cancer, and head and neck cancers.

The award will also enable Morris to develop better tumor models to study in situ vaccination mechanisms. Morris's group typically uses transplantable models where cell lines derived from a mouse tumor are injected into nearly identical mice. Although this is an efficient way to grow tumors in mice, it does not replicate the process of tumor formation in humans and may result in tumors that may be more readily cured.

Morris, who joined the DHO faculty in 2016 after completing his Radiation Oncology residency training in the department, is grateful for the support of the UW School of Medicine and Public Health, the UW Carbone Cancer Center and specifically for the guidance from his research mentors, Dr. Paul Harari, DHO professor and chairman, and Dr. Paul Sondel, DHO professor.

"When I was interviewed for this award, the NIH panel made clear that they viewed our institutional training environment to be incredibly strong," said Morris. "There's no question that this factored into my selection for this award. I feel quite fortunate to have trained here and to now have the opportunity to continue this exciting and rewarding research."