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Abstract/Bio:

Metastasis, the spread of cancer to distant organs, is the leading cause of death for patients with breast cancer. Patients with metastatic triple-negative breast cancer (TNBC) face poorer outcomes because effective targeted treatments are lacking. Advances in immunotherapy, namely immune checkpoint inhibitors (ICIs), can extend survival of patients with metastatic TNBC; however, most patients do not respond to treatment. Thus, there is a pressing need to uncover improved strategies to increase the number of responsive patients. ICIs work with the immune system to activate cytotoxic (or “killer”) immune cells to better attack cancer. Research has shown that suppressive signals from tumors block the activity of these killer immune cells, thus reducing how well immunotherapy treatments, like ICIs, work. Intriguingly, the liver is a common metastatic site for various cancers, including TNBC, yet it remains understudied compared to the lung. Currently, no therapies specifically target TNBC liver metastases. This project proposes to repurpose Ribavirin – an FDA-approved antiviral drug for hepatitis C – to enhance immunotherapy of TNBC liver metastases. Prior research shows that Ribavirin reduces immunosuppressive signals in the liver and boosts immune activity during hepatitis. However, its effects on the immune system in cancer, and its potential to enhance ICI therapy in TNBC liver metastases, have not been explored. By studying how Ribavirin alters liver immune cells and its impact on ICIs, this project could lead to improved treatments for TNBC patients and others with liver metastases. It will also provide new insights into how immune cells function within metastatic tumors. Dr. Katharine Umphred-Wilson earned her BS degree in Molecular Biology from the Rochester Institute of Technology and her PhD degree in Pathology from Case Western Reserve University under the mentorship of Dr. Stanley Adoro, where she investigated how genetic structures termed “super-enhancers” can be targeted to prevent the development of T-cell leukemia. She is now a postdoctoral fellow at Roswell Park Comprehensive Cancer Center in the laboratory of Dr. Scott Abrams, developing new therapeutic strategies that dampen myeloid-driven immune suppression to improve immunotherapy outcomes in metastatic TNBC.