Damon Runyon Cancer Research Foundation Announces Five 2021 Physician-Scientist Training Awardees

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Five scientists with exceptional promise and novel approaches to fighting cancer have been named the 2021 recipients of the Damon Runyon Physician-Scientist Training Award. The awardees were selected through a highly competitive and rigorous process by a scientific committee comprised of leading cancer researchers who are themselves physician-scientists.

Physician-scientists, uniquely positioned to offer insight into patients' experiences and needs, are essential to the translation of scientific discovery into effective therapies. However, this vital cadre of cancer researchers is declining at a time when cancer research holds the greatest promise of improving survival and quality of life among cancer patients.

To help increase the number of physician-scientists, the Damon Runyon Cancer Research Foundation (Damon Runyon) created the Damon Runyon Physician-Scientist Training Award, which provides physicians who have completed clinical specialty fellowship training the opportunity to gain the skills and experience needed to become leaders in translational and clinical research.

Since its launch in 2015, the program has funded 33 new physician-scientists from across a range of disciplines. Their research has not only brought forth insights into how cancer develops and spreads but also led to the development of new therapies, including several in clinical trials. "Physician-scientists require protected time and funding for research, so that they can bring crucial insights from the clinic to the laboratory, and vice versa," said Yung S. Lie, PhD, President and Chief Executive Officer of Damon Runyon. "Each of our physician-scientists is pursuing research with high potential for impact, and we are proud to enable this critical work."

Damon Runyon seeks to address the financial disincentives that often deter physicians from pursuing a research career by providing considerably higher funding than most research fellowships—$100,000 in the first year, with increases of $10,000 per year over the next three years. It will also retire up to $100,000 of any medical school debt still owed by an award recipient. (The average medical school debt now exceeds $200,000.)

The Physician-Scientist Training Award was established thanks to the generosity of Damon Runyon Board members Leon Cooperman and Michael Gordon.

2021 Damon Runyon Physician-Scientist Training Award Recipients:

Caitlin F. Bell, MD, with mentors Nicholas J. Leeper, MD, and Irving L. Weissman, MD, at Stanford University School of Medicine, Stanford

The connection between cardiovascular disease and cancer, the two leading causes of death in the United States, extends beyond cancer treatment's impact on the cardiovascular system. These complex diseases share several important risk factors and aspects of disease progression. In the development of atherosclerosis, a build-up of fatty material in the arterial walls, vascular smooth muscle cells can change their roles and influence the progression of disease. Dr. Bell aims to determine if the same dynamic activity of smooth muscle cells occurs in the environment of a tumor, and whether these cells influence disease progression or response to therapies. Preclinical data suggests a significant role for these cells in the tumor environment for multiple solid tumor types, such as melanoma, breast cancer, and colon cancer. These findings could represent a new pharmacologic target for multiple cancers.

Albert E. Kim, MD, with mentors Priscilla K. Brastianos, MD, and Elizabeth R. Gerstner, MD, at Massachusetts General Hospital, Boston

A feared complication of malignant solid tumors is the development of brain metastases (BM), for which current treatments are limited and morbidity is high. While precision medicine approaches for BM have recently demonstrated promise, many patients are not able to benefit from this treatment approach as molecular analysis of BM tissue is not usually feasible. To address this obstacle, Dr. Kim will apply genomic profiling and deep learning methods to a rich dataset comprised of BM tissues, patient-matched brain MRIs, and cell-free DNA samples to develop techniques that reveal therapeutic targets within a patient's BM. He hopes to identify ways to non-invasively characterize oncogenic drivers for a BM or monitor tumor evolution. These findings will demonstrate the potential of using algorithmic tools in the clinic to augment clinical decision-making and unlock opportunities for widespread application of precision medicine for BM.

(Peter) Geon Kim, MD, with mentor Benjamin L. Ebert, MD, PhD, at Dana-Farber Cancer Institute, Boston

Blood stem cells, which give rise to various blood cells in the body, acquire mutations with increasing frequency as we age. In the absence of blood cancer development, this state is called clonal hematopoiesis. Up to a quarter of individuals over 60 years old will have recurrent mutations detected in their blood. Recent studies suggest that those with clonal hematopoiesis have an increased risk of developing heart disease and blood cancer, as well as increased levels of inflammatory cytokines – signaling molecules released by immune cells to promote inflammation. Dr. Kim will dissect the mechanisms underlying increased inflammation, which could provide insight into various inflammatory conditions associated with clonal hematopoiesis and potentially elucidate how clonal hematopoiesis progresses into blood cancer.

Juan C. Osorio, MD, with mentor Jeffrey V. Ravetch, MD, PhD, at Memorial Sloan Kettering Cancer Center, New York

Cancer cells overexpress a “don’t eat me” signal that protects them from phagocytosis by interacting with a receptor on the surface of immune cells that ordinarily attack pathogens. Antibodies blocking this interaction enable elimination of tumor cells by phagocytosis and enhance adaptive immune responses, representing a promising strategy in cancer immunotherapy. However, this strategy remains poorly understood; there is no consensus on which type of antibodies is ideally suited to maximize immune cell activity in clinical trials. Dr. Osorio will investigate the mechanisms that promote effective antitumor immunity, aiming to inform the development of optimized antibodies, prevent on-target off-tumor toxicities, and design optimal combination strategies. His findings could apply to a wide range of malignancies.

Max M. Wattenberg, MD, with mentors Gregory L. Beatty, MD, PhD, and Robert H. Vonderheide, MD, PhD, at University of Pennsylvania, Philadelphia

Drugs that trigger the immune system to kill cancer cells show remarkable promise as cancer therapy. Many cancers, however, avoid detection by the immune system altogether. Dendritic cells (DCs), which play a critical role in initiating and maintaining immune responses, are often dysfunctional in cancer, preventing the immune system from “seeing” cancerous cells. Dr. Wattenberg hypothesizes that DC dysregulation is driven by systemic inflammation, a common reaction to cancer, and that novel DC-targeted treatments can reverse this dysfunction and sensitize tumors to immune attack. He will use mouse models of cancer and patient samples to investigate the mechanisms by which systemic inflammation impacts DC function and orchestrates resistance to immunotherapy, and will test methods to overcome DC dysregulation. Dr. Wattenberg hopes that these studies will provide new insight into fundamental mechanisms of cancer resistance to immunotherapy and identify novel treatment strategies for patients with cancer.

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