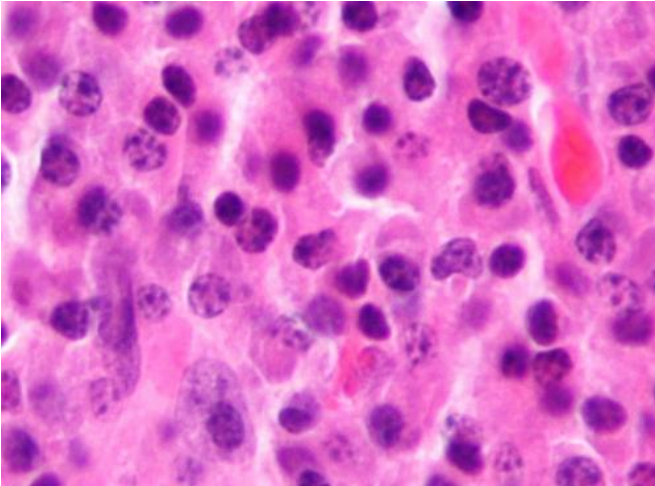


Researchers identify potential formula for blood cancer vaccine

19 December 2019



Micrograph of a plasmacytoma, the histologic correlate of multiple myeloma. H&E stain. Credit: Wikipedia/CC BY-SA 3.0

Researchers at the Icahn School of Medicine at Mount Sinai have discovered a way to move precision immunotherapy forward by using genomics to inform immunotherapy for multiple myeloma, a blood cancer, according to a study published in *Clinical Cancer Research*, a journal of the American Association for Cancer Research, in December.

This is the first study to experimentally determine which byproducts from the mutation of tumors (known as neoantigens) have the ability to provoke the immune system into recognizing and killing [cancer cells](#) in multiple myeloma patients. The results provide the foundation for using neoantigen-targeting strategies such as cancer vaccines in future trials for multiple myeloma patients. Multiple myeloma is a malignancy of plasma cells affecting 30,000 people a year.

Next-generation sequencing data was analyzed to describe the landscape of neoantigens in 184

patients, and researchers identified neoantigen-specific immune cells triggered by immunotherapy. Additionally, they showed an increase in neoantigens in patients who had relapsed myeloma versus new patients, which may indicate potential for greater immune responses to immunotherapy in these patients. The study also identifies common neoantigens between patients, which could lead to new vaccine therapies.

"Tumor neoantigens represent excellent targets for immunotherapy, due to their specific expression in cancer tissue," said Samir Parekh, MD, Associate Professor of Oncological Sciences and Medicine (Hematology and Medical Oncology) at the Icahn School of Medicine. "Until now, there has been no direct evidence that DNA mutations induce neoantigen-specific T-cell responses following immunotherapy in multiple myeloma."

Stemming from this research, co-author Nina Bhardwaj, MD, Ph.D., Professor of Medicine (Hematology and Medical Oncology) at the Icahn School of Medicine, and colleagues are pursuing a clinical trial investigating the safety and responsiveness of a personalized neoantigen vaccine for the treatment of cancers including multiple myeloma.

More information: Deepak Perumal et al. Mutation-derived Neoantigen-specific T-cell Responses in Multiple Myeloma. *Clin Cancer Res.* December 19 2019 [DOI: 10.1158/1078-0432.CCR-19-2309](#)

Provided by The Mount Sinai Hospital

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