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Moffitt researchers identify unique immune gene signature across thousands of patients' solid tumors

Discovery of lymph node-like structures furthers evidence that personalized immunotherapy is a possibility for certain cancer patients

Peer-Reviewed Publication

H. LEE MOFFITT CANCER CENTER & RESEARCH INSTITUTE

Researchers at Moffitt Cancer Center have discovered a unique immune gene signature that can predict the presence of microscopic lymph node-like structures in metastatic melanoma. The presence of these immune structures, the researchers said, appears to be associated with better survival and may indicate the possibility of selecting patients for immunotherapy based solely on the immune-related makeup of their tumors as an approach to personalized medicine.

The study appears in *Scientific Reports*, a journal from Nature Publishing Group.

In this study, the researchers analyzed a 12-chemokine gene expression signature across nearly 15,000 distinct solid tumors of different types, including metastatic melanoma. Chemokines are powerful immune system molecules known to be important in lymph node formation and function during development. The 12-chemokine gene expression signature was found to remarkably predict the presence of microscopic lymph node-like structures within some melanomas and was also associated with better overall survival of these patients.

The researchers speculate that the lymph nodal structures they identified are active and playing an important positive role in a self-elicited (endogenous) anti-tumor response – initially locally and then systemically. They also anticipate that their findings in melanoma may extend to other solid tumors, such as those of colorectal, lung and ovarian origin.

"We believe this gene expression signature reveals information on a unique anti-tumor response mechanism within the microenvironment of certain patient solid tumors, which may be their Achilles' heel to make them unusually responsive to immunotherapy and possibly lead to improved patient survival," explained the study's senior author, James J. Mulé, Ph.D., associate center director of Translational Research at Moffitt.

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This study was supported in part by the National Cancer Institute, part of the National Institutes of Health (R01 CA148995), The V Foundation for Cancer Research and the Dr. Miriam and Sheldon G. Adelson Medical Research Foundation. This work also utilized the Total Cancer Care® biorepository and data warehouse.

About Moffitt Cancer Center

Located in Tampa, Moffitt is one of only 41 National Cancer Institute-designated Comprehensive Cancer Centers, a distinction that recognizes Moffitt's excellence in research, its contributions to clinical trials, prevention and cancer control. Since 1999, Moffitt has been listed in *U.S. News & World Report* as one of "America's Best Hospitals" for cancer. With more than 4,200 employees, Moffitt has an economic impact on the state of nearly \$2 billion. For more information, visit MOFFITT.org, and follow the Moffitt momentum on Facebook, twitter and YouTube.

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