New understanding of cell metabolism provides therapeutic target

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(Medical Xpress) -- One of the reasons that cancer cells proliferate is that they metabolize fuel differently from normal cells. A team led by Blossom Damania, PhD, at the University of North Carolina at Chapel Hill School of Medicine, reports that two inter-related metabolic processes contribute to cell proliferation in non-Hodgkin lymphoma.

The research appears today in *Proceedings of the National Academy of Sciences*.

Non-Hodgkin lymphoma is a blood cancer of white blood cells and there are several different types of non-Hodgkin lymphoma, some of which can be associated with viral infection.

Damania, who is professor of microbiology and immunology and a member of UNC Lineberger Comprehensive Cancer Center, studies various forms of non-Hodgkin lymphoma. Her group has shown that a particular cell signaling pathway (PI3K/AKT/mTOR) is activated in several types of B-cell non-Hodgkin lymphoma (B-NHL).

This pathway is also important in controlling cell metabolism, including how the cell utilizes glucose (sugars) through a process called aerobic glycolysis, and how it makes fatty acids as building blocks for daughter cells.

“In this paper, our team found evidence that glycolysis and fatty acid synthesis are interdependent in B-NHL. The good news is that the

lymphoma cells are much more sensitive to a compound that inhibits fatty acid synthesis, as compared to normal B cells. This suggests that fatty acid synthase, the enzyme that drives fatty acid synthesis, is a promising target for new therapies against lymphoma," said Damania.

The paper was first-authored by Aadra Bhatt, a graduate student in the department of microbiology and immunology and a member of UNC Lineberger. Other members of the research team include Dirk Dittmer, PhD, also a UNC Lineberger member and professor of microbiology and immunology, Sarah Jacobs, PhD, a postdoctoral fellow in Lineberger, Liza Makowski, PhD, and Alex Freemerman, PhD, from the Gillings School of Global Public Health, and Jeffrey Rathmell, PhD, from Duke University.

The project was funded by grants from the National Institutes of Health, the National Cancer Institute and the University of North Carolina University Cancer Research Fund. Dr. Damania is a Leukemia and Lymphoma Society Scholar and a Burroughs Wellcome Fund Investigator in Infectious Diseases.

Provided by University of North Carolina at Chapel Hill School of Medicine

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