Study discovers negative regulator of natural killer cell maturation

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A new study has identified a regulatory pathway in natural killer cells that inhibits their maturation and homing behavior. Natural killer cells are one of the body's first lines of defense against viruses and cancer. The findings could lead to new strategies for boosting natural-killer cell activity against cancer and viral infections. The study was led by researchers at The Ohio State University Comprehensive Cancer Center - Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC - James). It showed that a protein called Foxo1 inhibits natural killer (NK) cell development and function.

It also shows that Foxo1 exerts its inhibitory effects by blocking transcription of the gene that encodes Tbx21, which is a known positive regulator of NK-cell development and function.

The research was reported in the journal *Immunity*.

"We discovered a pathway that cancer cells may use to block NK-cell function and evade immune responses," says principal investigator Jianhua Yu, PhD, assistant professor of medicine and a member of the OSUCCC - James Leukemia Research Program.

"The findings may provide us an opportunity to enhance NK-cell antitumor activity," he adds.

Yu and his colleagues used an animal model and human NK cells for the study. Key technical findings include:

- Foxo1 and Foxo3 control NK-cell maturation, but Foxo1 plays the major role;
- Reducing Foxo1 expression enhances NK-cell maturation;
- Foxo1 suppression of Tbx21 expression involves different mechanisms in human and mouse NK cells.

More information: *Immunity*, www.sciencedirect.com/science/ … ii/S1074761315000813

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