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Scientists set to eradicate HIV with natural killer cells

30 April 2019 | News

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A collaborative research team at the University of Minnesota has used Tri-specific killer engagers (TriKE) to target HIV-infected cells in preclinical testing.

The team, led by Jeffrey Miller, MD, Deputy Director of the Masonic Cancer Center, University of Minnesota, and Timothy Schacker, MD, Vice Dean of Research at the University of Minnesota Medical School and Director of the Program in HIV Medicine, has used their combined expertise to now find an innovative approach to potentially cure HIV.

After years of the Miller team working with natural killer (NK) cells to target cancer, and the Schacker group researching HIV reservoirs, the two physicians joined together to combine their efforts. The potential to use a cancer-based therapy on a disease like HIV was an opportunity the teams couldn't pass up.

"This exciting work is the result of years of collaboration between our groups, one of the great assets of team science at UMN," said Dr. Miller. "After years of work trying to target the immune system to fight cancer, and the Miller team learning more about HIV, we decided to work together with the Schacker group to target HIV reservoirs."

The TriKE, designed and developed at the University of Minnesota, was designed to bind NK cells, on one end, to target cancer cells on the other end, along with costimulation by an IL-15 cytokine linker contained between the two binding domains in the same protein. The IL-15, in this case, will be combined with CD4 T cells to potentially eliminate the HIV reservoir.

"The goal in this research is to eliminate the T cells, where HIV hides out in the body," said Dr. Schacker. "If successful, this has the potential to contribute to a cure for HIV."

Next steps for the research group will be to optimize the TriKE constructs, followed by testing in vitro, and then in vivo. If all goes as planned in that phase, the team will prepare for clinical trials.