Researchers discover unique immune cell likely drives chronic inflammation

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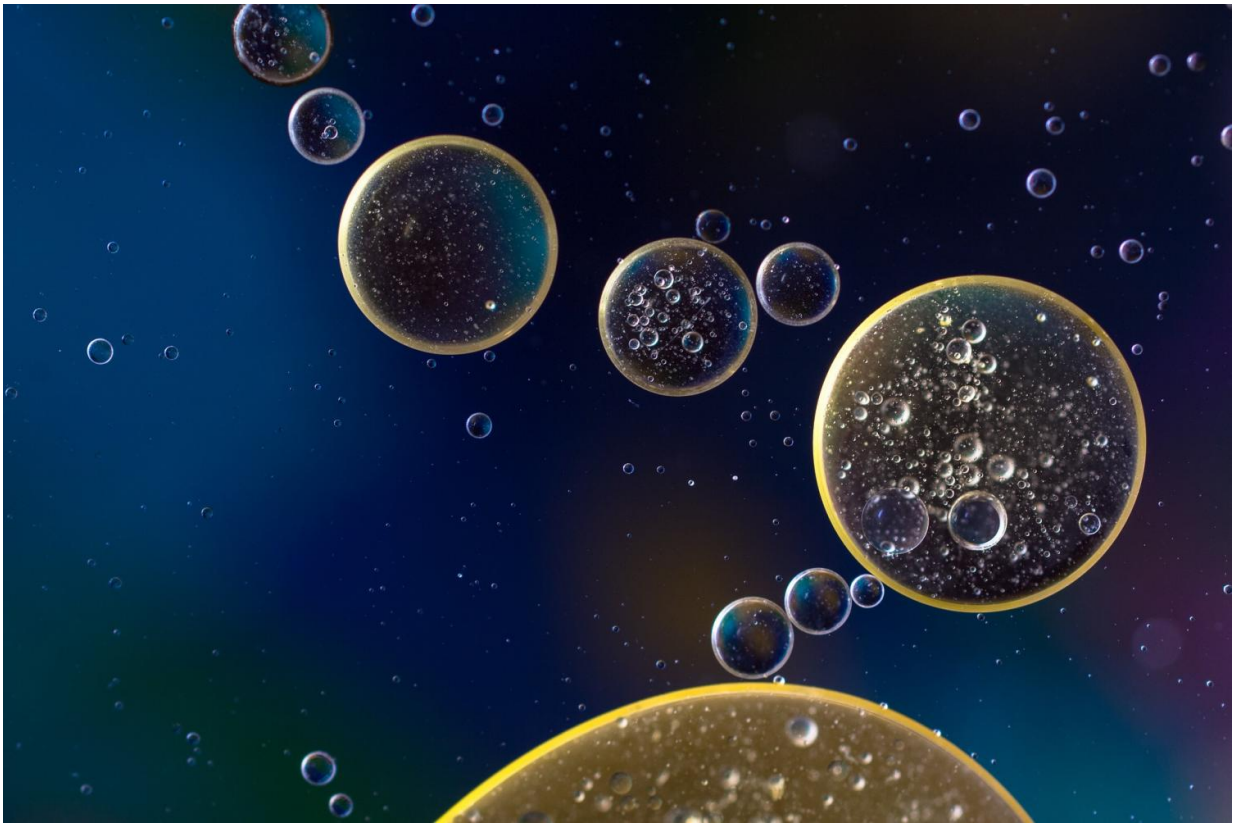

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For the first time, researchers have identified that an immune cell subset called gamma delta T cells that may be causing and/or perpetuating the systemic inflammation found in normal aging in the general geriatric

population and in HIV-infected people who are responding well to drugs (anti-retrovirals).

Even with effective viral control, HIV-infected individuals are at a higher risk for morbidities associated with older age than the general population. Unfortunately, the cell subsets driving inflammation in HIV infection and with normal aging are not yet understood. Also, whether antiretroviral therapy (ART) suppressed HIV infection causes premature induction of the inflammatory events found in uninfected elderly or if a novel inflammatory network ensues when HIV and older age co-exist is unclear.

To understand the cellular network that drives the onset and progression of age-associated morbidities in both ART-suppressed HIV and healthy aging, researchers from Boston University School of Medicine (BUSM) conducted a study that measured many markers on the surface of immune cells in the blood of people either with or without HIV (uninfected controls) that were sub-divided into two groups: younger (less than 35 years) and older (over 50 years) and compared that data with levels of inflammatory proteins in their plasma. This unique group of patients was recruited for the study by coauthor Nina Lin, MD, assistant professor of medicine at BUSM and an infectious disease specialist at Boston Medical Center.

Researchers found a marker on these gamma delta T cells, called TIGIT, that tracked significantly with plasma inflammatory markers in both the HIV+ and uninfected subject groups, and therefore could be targeted to potentially stop this "inflamm-aging" found in both HIV+ people and the general geriatric population.

"Our study indicates that there's a previously uninvestigated cell subset new player in the immune landscape that could be driving widespread illnesses and with targeted gamma delta therapeutics maybe there may be

a chance of reducing onset, symptoms, and/or severity of inflammation-related diseases," explained corresponding author Jennifer Snyder-Cappione, Ph.D., assistant professor of microbiology and director, Flow Cytometry Core Facility at BUSM.

More than 50 percent of the HIV-infected population in the U.S. is older than 50 years and the world's geriatric over the ages of 65 and 80 is predicted to double and nearly quadruple, respectively, by 2050. "Revealing and therapeutically targeting the cell populations and precise immune networks that drive "inflamm-aging" both with and without HIV infection is a preeminent global health priority."

The researchers, which include first author Anna Belkinia, Ph.D., assistant professor of pathology and laboratory medicine at BUSM, hope their study will spur new investigation and clinical trials targeting gamma delta T cell subsets to control unchecked inflammation and thereby reduce the onset and progression of many chronic diseases.

These findings appear in *Frontiers in Immunology*.

More information: Anna C. Belkina et al. Multivariate Computational Analysis of Gamma Delta T Cell Inhibitory Receptor Signatures Reveals the Divergence of Healthy and ART-Suppressed HIV+ Aging, *Frontiers in Immunology* (2018). DOI: 10.3389/fimmu.2018.02783

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