Researchers identify gene variant associated with cellular aging

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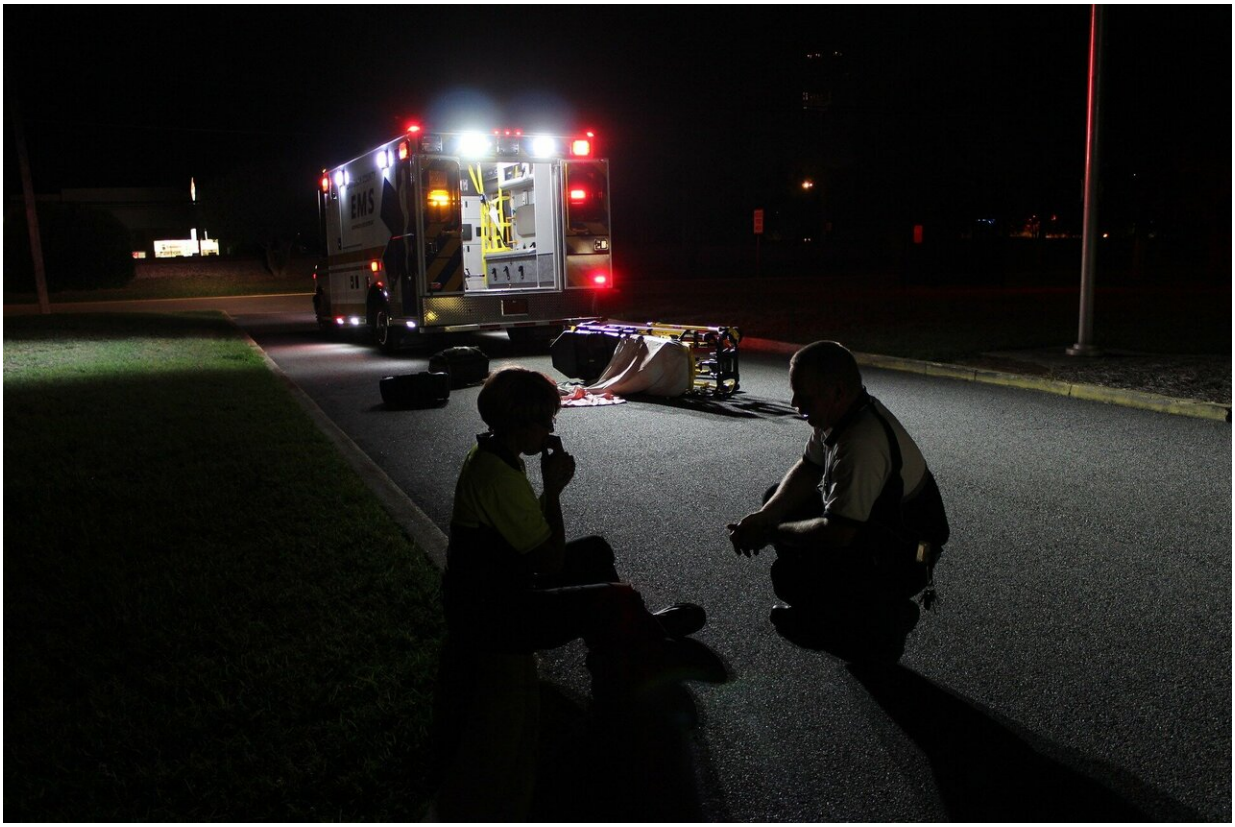

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It is well known that psychiatric stress is associated with accelerated aging. Now, a new study shows that a gene mutation interacts with multiple types of psychiatric stress including post-traumatic stress

disorder (PTSD), pain and sleep disturbances in association with cellular aging.

The klotho gene, which is named for the Greek Goddess Clotho who "spins the thread of life," has been connected with longevity and a variety of age-related conditions and diseases. This is the first time it has been shown to be a marker for accelerated cellular aging in humans.

The study involved 309 U.S. military veterans, of which a large percentage experienced PTSD, who had been deployed to the wars in Iraq and/or Afghanistan. All participants gave blood samples for genetic and metabolic analyses, and were evaluated for psychiatric conditions. They also underwent magnetic resonance imaging (MRI) to examine brain structure and function.

The researchers found that those with a particular klotho genotype who also had more severe PTSD symptoms were the ones who showed the strongest evidence of accelerated cellular aging. "We know that stress increases the likelihood of declining health. Our results suggest that klotho could be one factor that coordinates this decline across both the periphery and central nervous system, making individuals with substantial psychiatric stress more vulnerable to its pathological effects," explained corresponding author Erika J. Wolf, Ph.D., a clinical research psychologist at the National Center for PTSD at VA Boston Healthcare System.

According to the researchers, this study points to new directions that could be useful for slowing or reversing accelerated aging and thereby stemming the tide of stress- and age-related health decline. "These results help us to understand the pathophysiology of accelerated aging and raise the possibility that klotho could potentially be a new therapeutic target for protecting against age-related inflammation, metabolic dysfunction, and loss of neural integrity," added Wolf who is

also associate professor of psychiatry at Boston University School of Medicine.

The researchers hope to identify the pathophysiology of stress-related accelerated cellular aging and then develop new treatments that target the implicated pathways. They believe this could eventually reverse or slow the pace of cellular aging and reduce the risk for premature onset of age-related health decline in stressed populations.

These findings appear online in the journal *Brain, Behavior, & Immunity*.

More information: Erika J. Wolf et al, The goddess who spins the thread of life: Klotho, psychiatric stress, and accelerated aging, *Brain, Behavior, and Immunity* (2019). DOI: 10.1016/j.bbi.2019.03.007

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