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**Contact:** Sarah Marshall, Office of External Affairs

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## **Study identifies Epstein-Barr as a leading candidate for cause of Multiple Sclerosis**

**Bethesda, Md.** – A new study published Jan. 13 in *Science* reports that Epstein-Barr virus infection – known for causing mononucleosis or “mono” – could be a primary cause for multiple sclerosis.

This collaborative study, “Longitudinal analysis reveals high prevalence of Epstein-Barr Virus associated with multiple sclerosis,” was co-authored by researchers at the Uniformed Services University of the Health Sciences (USU). The study found that the risk of multiple sclerosis increased 32-fold specifically after infection with Epstein-Barr virus, but not after infection with the similarly transmitted cytomegalovirus. Furthermore, levels of neurofilament light chain, a biomarker of neurodegeneration, increased after Epstein-Barr infection.

The study was a collaboration between USU, Harvard Medical School, Massachusetts General Hospital, the University of Basel in Switzerland, and Brigham and Women’s Hospital. The researchers tested a hypothesis that multiple sclerosis is caused by a dysfunction of the immune system that is triggered by a viral infection. The Epstein-Barr virus is believed to be a top candidate, but evidence linking infection with the Epstein-Barr virus to multiple sclerosis has been inconclusive.

The researchers tested this hypothesis in a cohort of more than 8 million young adults on active duty in the U.S. military, 955 of whom were diagnosed with multiple sclerosis during their period of service. For each individual with multiple sclerosis, the researchers identified up to three serum samples provided by the Department of Defense Serum Repository that were collected before their onset date of multiple sclerosis. These individuals were then matched to two randomly selected individuals without multiple sclerosis of the same age, sex, race/ethnicity, branch of military service, and dates of blood sample collection.

These findings cannot be explained by any known risk factor for multiple sclerosis, but the researchers identified Epstein-Barr virus as a primary cause of multiple sclerosis. These findings further suggest that risk of multiple sclerosis might theoretically be modified by antiviral medications that directly target Epstein-Barr virus.

“Biomarker studies such as this are only practical in very large datasets due to the rarity of the condition studied and long latency between infection and development of disease. This study is an illustration of the enormous value of the Department of Defense Serum Repository and its benefit to the research community and the world,” said Dr. Ann Scher, professor of Preventive Medicine and Biostatistics at USU, one of the study’s authors.

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