

Several million people worldwide deal with a condition called multiple sclerosis (MS), which damages the central nervous system. Right now, there's no cure for MS, and we are not sure what causes it. Epstein-Barr virus (EBV) is suspected to be a major initiator of the disease in susceptible subjects but knowledge how EBV does this is lacking. That is where the DISRUPT-MS project comes in – we are trying to establish how EBV might be connected to MS. First off, we are looking into something called "epitope spreading," which is like the immune system going after new targets. We are also investigating the EB12 receptor, a big player in the immune system. To do this, we are using a special mouse model that gets a virus called Theiler's murine encephalomyelitis (TMEV) to mimic what happens in MS. Next, we are using a humanized mouse model (BRGST) to see how B cells from people with MS, infected by EBV, damage the central nervous system. Then, we are planning to stop the immune system from going after new targets in both mouse models using a lab-made version of a natural substance that is part of the immune system and acts on the EB12 receptor. This is supposed to stop the damage to the central nervous system. Lastly, we want to find out why some people are more likely to get MS after an EBV infection. If we can do all these things, we will connect the dots between the virus, the immune system going haywire, and the development of MS. It is like putting together pieces of a puzzle we do not fully understand yet. Getting to the bottom of how this virus leads to a long-term issue in the central nervous system could change the game in understanding MS.