A POTENT GP42 MONOCLONAL ANTIBODY NEUTRALIZES EBV INFECTION AND PROTECTS HUMANIZED MICE FROM EBV INFECTION

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Epstein-Barr virus (EBV) causes infectious mononucleosis and is associated with epithelial cell malignancies as well as B cell lymphomas. During primary infection EBV infects B cells and establishes lifelong latency. EBV glycoprotein 42 (gp42), which binds to gH/gL to form a gH/gL/gp42 heterotrimer, is indispensable for virus entry into B cells. gp42 interacts with its B cell receptor, HLA class II, and activates membrane fusion with B cells. Here, we report a gp42-specific monoclonal antibody (mAb), A10, that is superior to the published gp42 neutralizing mAb F-2-1 in its potency to neutralize EBV infection of B cells and inhibit glycoprotein-mediated B cell fusion. mAbs A10 and F-2-1 target a similar epitope on gp42, but A10 is more potent than F-2-1 to block HLA class II receptor binding to gp42. Importantly, infusion of mAb A10 into humanized mice confers nearly 100% protection from viremia and EBV lymphoma after challenge of the animals with EBV. This study yields a potential therapeutic antibody to prevent EBV infection and/or disease.