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Development of a Middle Eastern respiratory syndrome coronavirus DNA vaccine using baculoviral delivery system

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Middle East respiratory syndrome coronavirus (MERS-CoV) has emerged as a new pathogen that can transmit between humans as well as animals and humans, causing severe complications and high mortality rates. Since the MERS was first discovered at the end of 2012, it spread and has caused more than 1,800 infections and 650 deaths. No direct treatments are available yet, highlighting the importance of prevention through suitable vaccination regimes. The viral spike (S) protein has been characterized as a key target antigen for vaccines. The MERS-CoV spike (S) protein is responsible for receptor binding and virion entry into the cell and is highly immunogenic and induces neutralizing antibodies. In this study, we constructed a human endogenous retrovirus (HERV) envelope-coated, baculovirus-based, MERS-CoV DNA vaccines (S full gene, S1, and receptor binding domain (RBD) gene delivering vaccines. AcHERV-MERS (1×107 FFU) were intramuscularly injected into mice, and blood samples were collected every 10 days after immunization. The immunized sera showed high titers of MERS-Cov antibodies and neutralizing activity against MERS-CoV without adjuvant. The AcHERV-MERS could be a potential DNA vaccine candidate

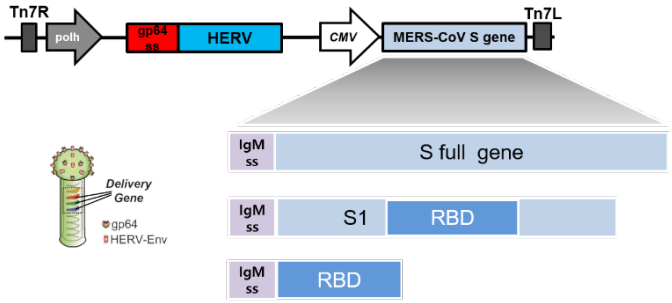

Figure: Schematic diagram of n MERS-CoV DNA vaccine constructs. Full-length Spike gene, Spike S1, and RBD gene were cloned under the CMV promoter. Each target genes contain the IgM signal peptide

Biography

Young Bong Kim received his Doctorate from Sogang University in Korea and trained at the NIAID/NIH in the United States. Since his appointment as a Professor at Konkuk University in 2003, he has been working on several vaccines against pathogenic viruses such as HIV, MERS-CoV and ZIKA virus.

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