US Army Medical Research and Materiel Command

Technology Available for Licensing

Monoclonal Antibodies to Ebola Glycoprotein

Features and advantages:

- Protects BALB/C strain mice from a lethal challenge with mouse-adapted Ebola Zaire virus
- Protects C57BL/6 strain mice from a similar challenge
- Binds specifically to epitopes on the Ebola virus GP
- Mabs are of the IgG1 and IgG2a subclass
- Can produce Mabs with desired characteristics by phage display, or common cell line types
- Can prepare as a mixture of Mabs to prevent, treat, and detect infections

This invention provides a method for using individual antibodies or mixtures thereof for the detection, prevention, and therapeutic treatment of Ebola virus infections, both *in vitro* and *in vivo*. The invention describes Ebola glycoprotein (GP) monoclonal antibodies (Mabs) and epitopes recognized by these Mabs. The invention includes several different Mabs against Ebola viral strains that are representative of five different antibody types. The MAbs were protective against Ebola challenge when administered prophylactically or therapeutically to mice.

Ebola viruses cause acute, lethal hemorrhagic fevers in humans and nonhuman primates. No vaccines or treatments currently exist against these viruses. Understanding of the immune mechanisms that mediate protection is limited. The membrane-anchored viral GP is the only one known to occur on the surfaces of both virions and infected cells, and is presumed responsible for receptor binding and fusion of the virus with host cells. Ebola GP may therefore be an important target of protective antibodies.

For the most effective Mabs, the amount required to protect mice was within an achievable human therapeutic dose of 3 – 5 mg/kg. Some of the Mabs were effective when administered two days after challenge, during which significant viral replication had occurred.

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